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(NASA-CR-164685) A PROGRAM TO EVALUATE A
CONTROL SYSTEM BASED ON FEEDBACK OF
AERODYNAMIC PRESSURE DIFFERENTIALS. PART 2
DATA REPORT FOR PHASE 1 WIND TUNNEL TEST
Interim (Kansas Univ. Center for Research,

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THE UNIVERSITY OF KANSAS CENTER FOR RESEARCH, INC.

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Interim Report
for
A PROGRAM TO EVALUATE A CONTROL SYSTEM
BASED ON FEEDBACK OF AERODYNAMIC
PRESSURE DIFFERENTIALS
KU-FRL-490-1
Part II
(Data Report for Phase I Windtunnel Test)

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1. INTRODUCTION

Contained herein is a complete presentation of the data obtained from the Phase I windtunnel test of the Delta P project. The purpose of the test was to determine the sensor location for sensitivity to flap deflection and to determine the range required of the sensor. The data is put in a form which most easily allows comparison of the sensitivity of each location. The results of each step taken to obtain the plots of Chapters 8 and 9 are included.

Chapter 2 details the calculations followed to correct the raw pressure measurements. Chapter 3 lists the corrected measurements, which represent the static pressures along the airfoil surface. Next, the static pressures are put in coefficient form, and tabulated in Chapter 4. However, the chordwise locations of the upper and lower surface taps do not coincide. An interpolation routine is performed to find the lower surface pressure coefficients at the upper surface tap locations. The results of the routine are compiled in Chapter 5. This allows the difference, $C_{P_{\text{LOWER}}} - C_{P_{\text{UPPER}}}$, to be calculated and listed in Chapter 6. Chapter 7 reorganizes the data and tabulates them with respect to each tap location, rather than by each run. Chapters 8 and 9 plot the data of Chapter 7, allowing visual inspection and interpretation. A numerical regression has been performed to quantify the slopes of the graphs of Chapters 8 and 9. This allows more accurate comparison of sensitivity and linearity.

At the end of each chapter is a listing of the computer program used to modify the data of the previous chapter.

2. DATA CORRECTION/REDUCTION CALCULATIONS

WIND TUNNEL BLOCKAGE CALCULATION

Ref.: Pope and Harper; Low Speed Wind Tunnel Testing;
Wiley; 1966.

For three-dimensional blockage, from Equation 6:28, pg. 320:

$$\epsilon_{SB_w} = \frac{K_1 \tau_1 (\text{Wing Volume})}{C^{3/2}} = \frac{\Delta V}{V} \quad (2.1)$$

where: K_1 = Body Shape Factor

= 1.08 (Fig. 6:15, pg. 321, for $t/c = .20$, 4-digit
airfoil curve).

τ_1 = Tunnel Section Factor

= .868 for $B/H = 1.35$ = Tunnel Breadth/Height

and $26/B = .67$ = Wing Span/Tunnel Breadth.

Wing Volume = .706 ft^3

$C = 12 \text{ ft}^2$

= Tunnel Cross-sectional Area

$\epsilon_{SB_w} = .01592$

$$q_{\infty \text{ CORR}} = (1 + \epsilon_{SB_w}^2) q_{\infty \text{ MEAS}} = 1.00025 q_{\infty \text{ MEAS}} \quad (2.2)$$

This is negligible! However, in the interests of accuracy,
the dynamic pressure was modified by the correction constant.

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STATIC PORT CORRECTION

The wind tunnel static pressure port (used for a reference to the surface pressures) is located forward of the leading edge of the surface, as shown below:

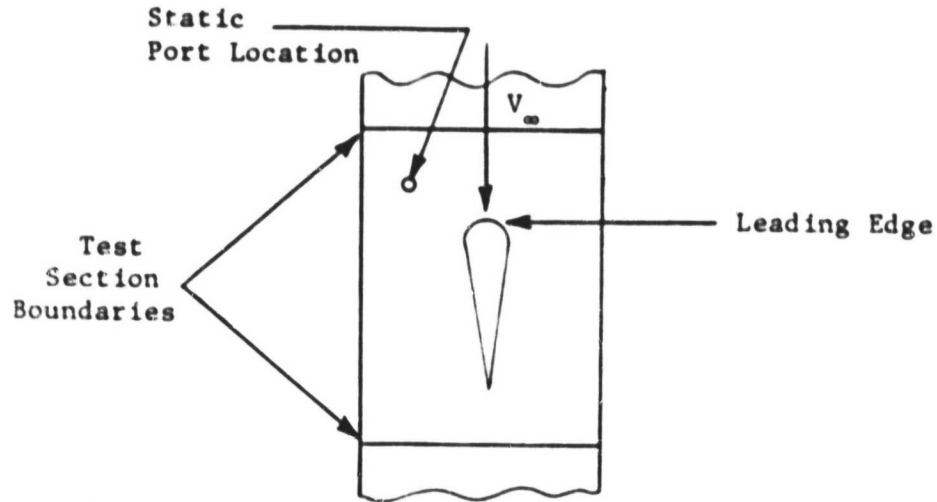


Figure 2.1 Static Port Location

The dynamic pressure at the surface is higher than at the static pressure port. The result is that the tunnel static pressure is higher at the static pressure port than at the surface. From Bernoulli's equation:

$$p_\infty + q_\infty = p_{\text{surface}} + q_{\text{surface}} \quad (2.3)$$

From the solid blocking calculations:

$$q_{\text{surface}} = (1 + \epsilon_{SB_w}^2) q_\infty \quad (2.4)$$

Substituting Equation (2.4) into Equation (2.3), we have:

$$p_{\text{surface}} = p_{\infty} - \epsilon_{SB_w}^2 q_{\infty}$$

or

$$p_{\text{surface}} = p_{\infty} - .00025 q_{\infty} \quad (2.5)$$

Again, this is a negligible correction; but it is performed nevertheless.

3. CORRECTED MANOMETER READINGS

This chapter contains the measured static pressure readings, in centimeters of alcohol along the manometer board, as corrected for blockage and position errors. It was felt that, since the corrections had little effect on the final values, the raw data should not be included. Tubes 2-27 are the surface pressure taps, while Tubes 1 and 28 are tunnel test section static ports.

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KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

RUN NUMBER 1

FLAP DEFLECTION ANGLE = -20

2 MARCH 1981

R. HRABAK, P. FINN

MANUMETER BOARD READINGS (cm)

ALPHA-ANGLE OF ATTACK (degrees)

TUBE NUMBER		-8	-6	-4	-2	0	2	4	6	8
1	*	42.0	42.0	42.0	42.0	42.0	41.8	41.7	41.7	41.5
2	*	109.0	101.2	94.7	89.7	83.1	77.0	71.2	66.3	61.6
3	*	87.7	84.7	81.5	80.3	76.5	71.3	66.3	63.2	60.2
4	*	70.4	67.7	65.0	62.9	59.7	56.7	53.8	57.1	49.9
5	*	69.9	67.7	65.6	64.0	61.5	59.1	56.8	55.0	53.0
6	*	63.1	61.3	59.6	58.3	56.3	54.5	52.5	51.1	49.5
7	*	61.1	59.5	58.0	56.9	55.2	53.7	52.0	50.8	49.5
8	*	59.1	58.1	56.9	56.0	54.5	53.2	51.6	50.7	49.6
9	*	58.6	57.7	56.6	56.0	54.6	53.6	52.3	51.6	50.6
10	*	57.6	56.7	55.8	55.4	54.1	53.2	52.1	51.5	50.6
11	*	56.6	56.0	55.3	55.0	54.0	53.3	52.1	51.7	51.1
12	*	56.0	55.6	55.1	55.2	54.4	53.7	52.5	52.4	52.0
13	*	55.7	55.5	55.3	55.8	55.9	56.0	55.8	56.1	55.2
14	*	55.3	55.1	54.9	55.2	56.1	56.0	55.0	55.2	54.5
15	*	50.0	54.3	58.8	63.7	68.6	73.6	78.0	82.5	83.7
16	*	46.7	50.7	54.6	57.8	58.7	58.9	61.6	65.4	66.8
17	*	41.5	43.8	46.2	48.7	51.0	53.4	55.5	58.0	59.3
18	*	39.2	41.0	43.0	44.9	46.6	48.3	50.0	52.2	53.8
19	*	39.2	40.7	42.5	44.1	45.5	47.0	48.4	50.2	52.2
20	*	38.0	39.2	40.7	42.1	43.2	44.5	45.7	47.3	49.5
21	*	37.7	38.9	40.2	41.4	42.2	41.3	44.3	45.5	48.0
22	*	36.3	37.2	38.3	39.4	40.1	41.0	41.9	43.0	45.8
23	*	35.0	35.8	36.8	37.7	38.2	38.9	39.8	40.7	44.0
24	*	33.5	34.2	35.0	35.7	36.2	36.8	37.5	38.5	42.0
25	*	29.7	30.3	31.0	31.6	32.0	32.6	33.5	34.8	38.7
26	*	27.2	27.8	28.4	29.0	29.4	30.0	31.0	32.3	36.0
27	*	32.1	32.5	33.0	33.4	33.4	33.8	34.2	34.8	36.1
28	*	42.1	42.1	42.3	42.1	42.0	42.0	41.8	41.8	41.7
REF.	*	27.0	26.8	27.0	27.8	28.1	28.2	28.2	28.1	28.8

STATIC LEVEL = 37.8

KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

RUN NUMBER 2

FLAP DEFLECTION ANGLE = -15

3 MARCH 1961

R. HRABAK, D. LEVY

MANOMETER BOARD READINGS (cm)

TUBE		ALPHA-ANGLE OF ATTACK (degrees)								
NUMBER	*	-8	-6	-4	-2	0	2	4	6	8
1	*	42.1	42.1	42.1	42.0	42.0	41.9	41.7	41.4	41.4
2	*	106.6	99.8	93.2	87.0	81.7	75.9	70.4	65.2	60.0
3	*	86.2	82.7	79.7	77.4	74.6	70.3	66.2	62.4	58.3
4	*	69.3	67.0	64.3	61.3	58.9	56.2	53.6	51.3	49.3
5	*	88.6	66.8	64.7	62.3	60.6	58.4	56.2	54.2	52.1
6	*	61.9	60.5	58.7	56.8	55.4	53.7	52.0	50.4	48.7
7	*	60.1	58.9	57.4	55.8	54.6	53.1	51.6	50.4	48.9
8	*	58.3	57.4	56.2	54.7	53.7	52.5	51.3	50.1	49.0
9	*	57.8	57.2	56.1	54.9	54.0	53.0	52.0	51.1	50.1
10	*	56.7	56.1	55.1	54.1	53.4	52.5	51.7	50.9	50.2
11	*	55.8	55.5	54.7	53.8	53.3	52.5	51.9	51.3	50.7
12	*	55.3	55.0	54.5	53.7	53.3	52.7	52.4	52.0	51.7
13	*	54.6	54.6	54.8	55.1	55.3	55.4	55.5	55.7	55.7
14	*	53.6	53.5	53.4	53.7	53.9	53.9	53.8	53.5	53.1
15	*	51.9	57.5	61.1	65.7	71.1	75.8	85.3	83.4	86.7
16	*	48.6	52.6	56.6	59.4	59.7	65.0	63.4	66.7	69.1
17	*	43.1	45.5	47.9	50.2	52.8	60.0	57.0	59.2	60.9
18	*	40.7	42.6	44.5	46.2	48.2	49.8	51.5	52.2	54.6
19	*	40.7	42.3	44.0	45.5	47.2	48.6	49.8	51.2	52.2
20	*	39.4	41.9	42.3	43.5	45.0	46.1	47.2	48.2	49.1
21	*	39.3	40.6	41.8	42.8	44.2	45.1	45.8	46.7	47.3
22	*	38.0	39.1	40.1	41.0	42.1	42.8	43.6	44.3	44.8
23	*	37.0	37.9	38.8	39.5	40.4	41.0	41.6	42.2	42.7
24	*	35.7	36.4	37.2	37.9	38.6	39.0	39.5	40.0	40.5
25	*	32.3	33.0	33.6	34.0	34.6	35.0	55.5	36.1	36.8
26	*	29.8	30.3	30.9	31.4	31.9	32.3	32.9	33.4	34.3
27	*	33.9	34.3	34.7	35.0	35.3	35.5	35.7	36.0	36.3
28	*	42.1	42.1	42.1	42.0	42.0	41.8	41.7	41.6	41.4
REF.	*	27.3	27.3	27.3	27.7	28.1	28.3	28.5	28.5	28.5

STATIC LEVEL = 37.2

KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

FUN NUMBER 3

FLAP DEFLECTION ANGLE = -10

: MARCH 1981

R. HRABAK, D. LEVY

MANOMETER BOARD READINGS (cm)

TUBE	*	ALPHA-ANGLE OF ATTACK (degrees)								
NUMBER	*	-8	-6	-4	-2	0	2	4	6	8
1	*	41.9	41.9	41.7	41.7	41.7	41.6	41.5	41.3	41.2
2	*	103.3	96.7	90.4	84.7	79.7	74.1	68.8	63.3	58.7
3	*	83.7	80.8	77.9	76.1	73.2	68.8	64.7	60.9	57.2
4	*	67.6	65.4	62.3	59.9	57.7	54.9	52.5	50.2	48.3
5	*	67.0	65.2	62.9	61.0	59.2	57.1	55.1	53.1	50.9
6	*	60.5	59.0	57.1	55.6	54.2	52.5	50.9	49.3	47.7
7	*	58.8	57.5	55.6	54.6	53.4	51.9	50.6	49.3	47.9
8	*	56.8	55.9	54.5	53.5	52.4	51.3	50.1	49.0	47.7
9	*	56.5	55.7	54.5	53.6	52.8	51.7	50.8	49.8	48.8
10	*	55.2	54.5	53.5	52.7	52.0	51.1	50.3	49.5	48.7
11	*	54.4	53.8	53.0	52.4	51.8	51.0	50.4	49.8	49.1
12	*	53.8	53.3	52.7	52.2	51.7	51.2	50.8	50.3	49.9
13	*	53.0	53.2	53.2	53.4	53.5	53.5	53.6	53.6	53.5
14	*	49.9	49.7	49.5	49.4	49.3	48.9	48.6	48.3	47.8
15	*	53.9	58.4	63.2	69.1	73.2	77.7	82.3	85.3	88.8
16	*	50.3	54.5	58.6	61.6	60.8	62.0	64.9	68.2	70.7
17	*	44.4	46.8	49.3	51.7	54.2	56.4	58.4	60.5	62.5
18	*	42.0	44.0	45.8	47.7	49.5	51.1	52.8	54.5	56.0
19	*	42.1	43.8	45.5	47.2	48.7	50.0	51.3	52.6	53.8
20	*	40.9	42.3	43.8	45.3	46.5	47.7	48.7	49.8	50.8
21	*	41.0	42.2	43.5	44.8	45.8	46.7	47.6	48.4	49.2
22	*	39.7	40.8	42.0	43.0	43.9	44.8	45.5	46.2	46.8
23	*	39.0	39.9	40.8	41.8	42.5	43.1	43.7	44.3	44.9
24	*	37.9	38.7	39.5	40.2	40.8	41.4	41.9	42.4	43.0
25	*	35.5	36.1	36.6	37.1	37.6	38.0	38.4	38.9	39.6
26	*	33.0	33.5	34.1	34.6	35.0	35.5	35.9	36.4	37.1
27	*	35.8	36.2	36.6	35.9	37.2	37.5	37.7	38.0	38.4
28	*	41.8	41.8	41.8	41.8	41.7	41.6	41.5	41.3	41.2
REF.	*	27.0	27.3	27.5	28.0	28.2	28.3	28.3	28.4	28.3

STATIC LEVEL = 37.0

KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

RUN NUMBER 4

4 MARCH 1981

ORIGINAL PAGE IS
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FLAP DEFLECTION ANGLE = -5

R. HRABAK P. FINN

MANOMETER BOARD READINGS (cm)

TUBE NUMBER	*	ALPHA-ANGLE OF ATTACK (degrees)								
		-8	-6	-4	-2	0	2	4	6	8
1	*	42.0	42.0	41.9	41.8	41.6	41.6	41.5	41.6	41.3
2	*	100.3	94.6	88.3	82.7	77.1	72.2	67.2	62.8	57.5
3	*	81.8	78.9	76.0	74.1	70.5	66.6	63.2	60.1	55.8
4	*	66.2	64.1	61.2	58.8	56.1	53.7	51.5	49.7	47.5
5	*	65.4	63.8	61.5	59.6	57.5	55.8	53.9	52.2	49.9
6	*	58.8	57.5	55.7	54.1	52.4	51.1	49.6	48.3	46.5
7	*	57.0	55.8	54.5	52.9	51.6	50.5	49.2	48.0	46.5
8	*	55.2	54.4	53.1	51.8	50.7	49.7	48.7	47.7	46.4
9	*	54.6	53.8	52.7	51.6	50.6	49.9	49.0	48.2	47.1
10	*	53.4	52.7	51.8	50.8	50.0	49.4	48.6	48.0	46.9
11	*	52.6	52.1	51.2	50.3	49.6	49.1	48.5	48.0	47.1
12	*	52.2	51.7	50.9	50.2	49.5	49.2	48.7	48.4	47.8
13	*	51.0	51.0	50.7	50.2	50.0	49.9	49.5	49.3	48.7
14	*	47.2	47.0	46.6	46.2	45.8	45.6	45.1	44.8	44.1
15	*	56.1	61.1	65.8	70.0	74.8	79.9	84.1	88.2	92.5
16	*	52.3	56.8	60.5	62.5	61.6	63.7	66.4	70.7	73.6
17	*	46.3	49.0	51.4	53.5	56.0	58.2	60.0	62.8	65.0
18	*	43.7	45.9	47.7	49.3	51.2	52.8	54.3	56.5	58.3
19	*	43.9	45.8	47.5	48.8	50.5	51.8	53.0	54.7	56.1
20	*	42.8	44.5	45.8	47.0	48.5	49.5	50.5	52.0	53.1
21	*	43.1	44.5	45.7	46.7	48.0	48.7	49.5	50.7	51.6
22	*	42.1	43.2	44.3	45.1	46.2	47.0	47.6	48.6	49.5
23	*	41.6	42.5	43.4	44.1	45.0	45.7	46.2	47.0	47.7
24	*	40.8	41.7	42.4	43.0	43.8	44.3	44.8	45.5	46.1
25	*	39.5	40.0	40.5	41.0	41.5	41.9	42.2	42.7	43.2
26	*	37.2	37.7	38.2	38.8	39.3	39.7	40.0	40.5	41.0
27	*	38.1	38.6	39.0	39.3	39.7	40.0	40.2	40.6	41.0
28	*	42.2	42.1	42.0	41.8	41.7	41.6	41.5	41.5	41.3
REF.	*	27.3	27.4	27.6	27.7	28.1	27.8	27.8	28.6	28.5

STATIC LEVEL = 37.8

KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

RUN NUMBER 5

FLAP DEFLECTION ANGLE = 0

6 MARCH 1981

R. HRABACK, D. LEVY

MANOMETER BOARD READINGS (cm)

TUBE	*	ALPHA-ANGLE OF ATTACK (degrees)								
NUMBER	*	-8	-6	-4	-2	0	2	4	6	8

1	*	42.0	41.8	41.7	41.7	41.5	41.4	41.3	41.3	41.1
2	*	98.1	91.9	85.7	81.7	76.2	70.9	65.6	61.1	55.9
3	*	79.5	77.2	74.2	73.0	69.8	65.8	61.5	58.5	54.8
4	*	63.9	61.8	58.9	57.1	54.6	52.2	49.7	48.0	46.1
5	*	63.7	61.9	59.7	58.3	56.4	54.5	52.4	50.7	48.4
6	*	57.0	55.6	53.7	52.7	51.2	49.7	48.0	46.7	44.9
7	*	55.4	53.9	52.4	51.6	50.3	49.0	47.7	46.6	44.9
8	*	53.3	52.4	51.1	50.4	49.3	48.3	47.1	46.2	44.7
9	*	52.5	51.6	50.4	49.9	49.0	48.1	47.2	46.4	45.2
10	*	51.4	50.5	49.5	49.0	48.3	47.6	46.7	46.1	45.0
11	*	50.2	49.3	48.5	48.1	47.5	46.8	46.2	45.7	44.7
12	*	49.3	48.6	47.8	47.4	47.0	46.5	46.0	45.7	44.8
13	*	45.7	45.3	44.8	44.7	44.2	43.6	43.0	42.4	41.8
14	*	43.3	42.8	42.4	42.2	41.7	41.2	40.7	40.2	39.8
15	*	58.8	63.0	67.6	72.7	77.2	81.5	85.8	90.8	96.0
16	*	54.3	58.7	62.2	64.2	63.0	65.2	68.3	73.2	76.8
17	*	48.3	50.5	52.8	55.3	57.4	58.5	61.6	64.9	67.4
18	*	45.7	47.3	49.1	51.0	52.6	54.2	55.8	58.5	60.5
19	*	46.0	47.5	48.9	50.6	51.9	53.2	54.6	56.8	58.4
20	*	44.9	46.2	47.4	48.8	49.9	51.1	52.2	54.2	55.4
21	*	45.3	46.4	47.5	48.7	49.6	50.4	51.3	52.9	54.1
22	*	44.5	45.4	46.4	47.4	48.2	48.9	49.7	51.1	52.1
23	*	44.1	45.0	45.7	46.6	47.3	47.8	48.5	49.7	50.6
24	*	43.7	49.4	45.1	45.8	46.4	46.9	47.4	48.4	49.2
25	*	43.7	44.1	44.4	44.9	45.2	45.5	45.8	46.6	47.2
26	*	42.2	42.8	43.3	44.1	44.6	44.9	45.3	46.1	46.6
27	*	40.9	41.3	41.7	42.1	42.5	42.8	43.1	43.7	44.2
28	*	42.0	41.8	41.7	41.6	41.5	41.4	41.3	41.3	41.1
REF.	*	27.4	27.6	27.6	28.2	28.2	28.0	27.8	29.0	29.0

STATIC LEVEL = 37.1

KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

RUN NUMBER 6

FLAP DEFLECTION ANGLE = 5

4 MARCH 1981

R. HRABAK, D. LEVY

MANOMETER BOARD READINGS (cm)

TUBE		ALPHA-ANGLE OF ATTACK (degrees)								
NUMBER	*	-8	-6	-4	-2	0	2	4	6	8
1	*	41.8	41.7	41.6	41.4	41.3	41.3	41.2	40.9	40.7
2	*	95.9	90.0	84.6	79.2	74.5	69.1	64.1	58.5	53.3
3	*	78.2	75.4	73.4	71.4	68.6	64.0	60.4	55.9	52.4
4	*	62.4	60.3	57.9	55.5	53.4	50.8	48.6	46.1	44.4
5	*	62.0	60.3	58.5	56.7	55.1	53.0	51.1	48.7	46.4
6	*	55.5	54.1	52.5	51.1	49.9	48.3	46.7	44.8	42.9
7	*	53.8	52.4	51.2	50.0	48.9	47.7	46.3	44.7	43.0
8	*	51.7	50.8	49.7	48.7	47.8	46.7	45.5	44.0	42.6
9	*	50.8	49.8	48.9	48.1	47.3	46.5	45.4	44.2	43.0
10	*	49.3	48.5	47.7	47.0	46.3	45.7	44.7	43.6	42.4
11	*	47.9	47.2	46.4	45.8	45.3	44.7	44.0	43.0	42.0
12	*	46.8	46.1	45.5	45.0	44.6	44.3	43.6	42.9	42.0
13	*	39.2	38.5	38.0	37.5	37.1	36.7	36.1	35.4	34.8
14	*	39.0	38.5	38.1	37.7	37.4	36.9	36.4	35.8	35.2
15	*	60.5	64.6	69.0	73.3	78.3	83.6	88.3	93.0	98.8
16	*	56.5	60.2	63.9	66.2	64.4	66.7	70.2	74.9	78.6
17	*	49.6	51.7	53.9	56.1	58.5	60.9	63.3	66.7	69.4
18	*	46.9	48.6	50.3	52.0	53.7	55.7	57.5	60.2	62.5
19	*	47.9	48.9	50.4	51.8	53.3	54.9	56.5	58.7	60.5
20	*	46.5	47.7	48.9	50.1	51.4	53.8	54.2	56.1	57.7
21	*	47.2	48.2	49.2	50.2	51.3	52.4	53.5	55.1	56.4
22	*	46.5	47.3	48.2	49.1	50.1	51.1	52.1	53.5	54.6
23	*	46.5	47.2	48.0	48.7	49.5	50.4	51.2	52.5	53.4
24	*	46.4	47.0	47.6	48.2	48.9	49.7	50.3	51.5	52.3
25	*	47.4	47.7	48.0	48.5	48.9	49.5	49.9	50.7	51.3
26	*	48.6	49.3	49.6	50.0	50.4	50.8	51.2	51.9	52.3
27	*	44.3	44.5	44.8	45.2	45.5	45.9	46.3	46.9	47.3
28	*	41.8	41.6	41.5	41.4	41.4	41.3	41.2	41.0	40.7
REF.	*	27.7	27.6	27.8	27.8	28.0	28.1	28.1	28.9	28.8

STATIC LEVEL = 37.8

KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

RUN NUMBER 7

FLAP DEFLECTION ANGLE = 10

4 MARCH 1981

R. HRABAK, D. LEVY

MANOMETER BOARD READINGS (cm)

TUBE NUMBER		ALPHA-ANGLE OF ATTACK (degrees)								
		-8	-6	-4	-2	0	2	4	6	8
1	*	41.7	41.6	41.5	41.3	41.2	41.1	40.8	40.6	40.4
2	*	94.5	88.5	83.2	78.0	72.7	67.1	61.8	56.1	51.3
3	*	75.8	74.1	72.2	70.2	66.8	62.4	58.2	54.0	50.5
4	*	61.0	59.1	56.6	54.3	52.0	49.3	46.9	44.5	42.9
5	*	60.7	59.0	57.1	55.4	53.6	51.4	49.3	46.8	44.7
6	*	54.1	52.7	51.2	49.8	48.5	46.7	45.0	43.0	41.3
7	*	52.3	51.0	49.8	48.7	47.5	46.0	44.5	42.8	41.4
8	*	50.0	49.2	48.0	47.1	46.1	44.8	43.5	42.0	40.7
9	*	48.9	48.1	47.2	46.3	45.5	44.4	43.3	42.0	40.9
10	*	47.3	46.4	45.7	45.0	44.3	43.3	42.3	41.1	40.1
11	*	45.6	44.8	44.2	43.5	43.0	42.1	41.3	40.3	39.4
12	*	44.1	43.4	42.9	42.3	41.9	41.2	40.5	39.6	38.8
13	*	34.3	33.4	32.7	32.2	31.7	30.2	30.5	29.8	29.0
14	*	35.8	35.1	34.7	34.3	34.0	33.7	32.1	32.6	32.0
15	*	62.3	66.6	71.1	75.5	80.7	85.7	80.7	94.7	102.7
16	*	58.2	62.0	65.8	68.1	66.2	68.4	72.1	76.2	81.3
17	*	50.9	53.1	55.3	57.6	60.1	62.6	65.1	67.9	71.9
18	*	48.3	50.0	51.7	53.4	55.3	57.3	59.2	61.5	64.7
19	*	49.0	50.4	52.0	54.3	55.0	56.6	58.3	60.1	62.7
20	*	48.1	49.3	50.6	51.8	53.2	54.6	56.0	57.6	59.7
21	*	48.9	50.0	51.0	52.0	53.2	54.3	55.5	56.7	58.4
22	*	48.5	49.4	50.3	51.2	52.3	53.3	54.3	55.4	56.9
23	*	48.9	49.6	50.4	51.1	52.0	52.8	53.7	54.6	55.8
24	*	49.1	49.8	50.4	51.0	51.7	52.5	53.2	53.9	55.0
25	*	51.7	52.1	52.4	52.8	53.2	53.7	54.1	54.4	55.0
26	*	54.7	54.9	55.1	55.2	55.3	55.5	55.7	55.7	55.9
27	*	47.9	48.1	48.3	48.6	48.9	49.3	49.6	49.8	50.2
28	*	41.7	41.6	41.4	41.3	41.2	41.1	40.8	40.6	40.3
REF.	*	28.2	28.2	28.1	28.1	28.2	28.3	28.2	28.2	28.5

STATIC LEVEL = 37.1

KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

RUN NUMBER 8

FLAP DEFLECTION ANGLE = 15

6 MARCH 1981

R. HRABAK, P. FINN

MANOMETER BOARD READINGS (cm)

TUBE	*	ALPHA-ANGLE OF ATTACK (degrees)								
NUMBER	*	-8	-6	-4	-2	0	2	4	5	8

1	*	41.8	41.7	41.5	41.6	41.3	41.0	40.7	40.4	40.1
2	*	94.1	87.2	81.9	77.0	71.5	65.7	60.1	54.5	49.6
3	*	76.1	72.6	70.9	69.1	65.5	60.5	56.7	52.3	48.9
4	*	60.7	58.0	55.8	53.6	51.1	48.2	45.9	43.4	41.8
5	*	60.0	57.8	56.1	54.4	52.4	50.2	48.0	45.5	43.2
6	*	53.3	51.6	50.2	48.9	47.3	45.5	43.8	41.8	40.1
7	*	51.5	49.9	48.8	47.6	46.3	44.9	43.4	41.6	40.1
8	*	49.0	47.8	46.7	45.8	44.7	43.4	42.1	40.6	39.2
9	*	47.6	46.6	45.7	45.0	44.0	43.0	41.9	40.5	39.5
10	*	45.6	44.7	44.0	43.3	42.5	41.5	40.5	39.4	38.5
11	*	43.8	43.0	42.3	41.8	41.0	40.2	39.5	38.4	37.5
12	*	42.0	41.3	40.7	40.2	39.6	38.9	38.2	37.4	36.7
13	*	31.2	30.2	29.3	28.7	28.0	27.3	26.6	26.0	25.2
14	*	33.2	32.7	32.2	31.9	31.5	31.1	30.7	30.2	29.8
15	*	64.6	68.1	72.6	77.2	82.4	87.7	92.2	96.7	102.9
16	*	60.1	63.5	67.1	69.4	67.5	69.8	74.1	77.8	81.7
17	*	52.6	54.4	56.5	58.9	61.5	64.0	66.8	69.7	72.5
18	*	49.7	51.2	52.9	54.7	56.6	58.6	60.7	63.1	65.3
19	*	50.7	51.8	53.2	54.8	56.4	58.0	59.8	61.8	63.5
20	*	49.9	50.8	52.0	53.3	54.6	56.0	57.5	59.2	60.8
21	*	50.8	51.5	52.5	53.6	54.7	55.9	57.1	58.5	59.7
22	*	50.6	51.1	52.0	53.0	54.0	55.0	56.0	57.2	58.2
23	*	51.2	51.6	52.4	53.1	54.0	54.7	55.5	56.5	57.3
24	*	51.8	52.1	52.7	53.2	53.9	54.5	55.2	56.0	56.5
25	*	55.8	55.6	55.7	56.0	56.2	56.4	56.5	56.7	56.7
26	*	59.4	59.0	58.9	58.9	58.8	58.6	58.4	58.3	57.9
27	*	51.5	51.5	51.6	51.7	52.0	52.2	52.5	53.0	53.2
28	*	42.0	41.8	41.6	41.5	41.3	41.1	40.8	40.7	40.2
REF.	*	28.4	28.3	28.3	28.3	28.3	28.3	28.2	28.8	28.5

STATIC LEVEL = 37.8

KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

RUN NUMBER 9

FLAP DEFLECTION ANGLE = 20

6 MARCH 1981

R. HRABAK, P. FINN

MANOMETER BOARD READINGS (cm)

TUBE		ALPHA-ANGLE OF ATTACK (degrees)								
NUMBER	*	-8	-6	-4	-2	0	2	4	6	8

1	*	41.6	41.4	41.3	41.1	41.0	40.7	40.5	40.2	39.8
2	*	89.8	85.0	80.4	75.1	69.5	63.5	58.0	52.6	47.7
3	*	71.7	70.8	69.5	67.6	63.8	58.8	54.5	50.6	47.1
4	*	58.1	56.7	54.6	52.3	49.6	46.8	44.2	42.1	40.6
5	*	57.5	56.2	54.7	52.8	50.8	48.5	47.2	43.9	41.8
6	*	51.2	50.2	48.9	47.4	45.8	44.0	42.2	40.3	38.7
7	*	49.5	48.4	47.2	46.0	44.7	43.2	41.7	40.2	38.7
8	*	46.8	46.2	45.1	44.1	43.0	41.6	40.2	39.8	37.6
9	*	45.5	44.8	44.0	43.1	42.1	41.0	39.9	38.7	37.7
10	*	43.5	42.7	42.0	41.2	40.3	39.5	38.5	37.4	36.5
11	*	41.5	40.8	40.1	39.5	38.7	37.9	37.0	36.2	35.4
12	*	39.6	38.9	38.2	37.5	36.8	36.2	35.6	34.8	34.2
13	*	30.5	28.2	26.8	25.8	24.8	24.0	23.1	22.4	21.8
14	*	31.3	30.2	29.5	29.0	28.6	28.3	27.8	27.5	27.1
15	*	64.7	68.9	73.2	78.0	83.6	89.0	92.7	98.1	103.0
16	*	60.2	64.1	67.9	70.3	68.4	70.8	75.1	78.7	82.0
17	*	52.8	54.9	57.1	59.5	62.1	64.8	67.7	70.4	72.8
18	*	50.1	51.8	53.5	55.2	57.3	59.4	61.6	63.8	65.7
19	*	51.1	52.5	53.9	55.5	57.1	58.8	60.6	62.3	63.9
20	*	50.2	51.4	52.6	53.9	55.4	56.9	58.4	59.8	61.0
21	*	51.2	52.2	53.2	54.3	55.5	56.7	58.0	59.1	60.0
22	*	51.2	52.0	52.8	53.7	54.7	55.8	56.8	57.7	58.6
23	*	51.9	52.5	53.1	54.0	54.7	55.6	56.4	57.1	57.7
24	*	52.6	53.0	53.4	54.0	54.6	55.3	55.9	56.4	56.9
25	*	56.8	56.6	56.6	56.6	56.7	56.8	56.7	56.7	56.6
26	*	61.9	61.2	60.6	60.4	59.9	59.6	59.0	58.5	58.0
27	*	55.4	55.3	55.4	55.5	55.8	56.0	56.1	56.2	56.2
28	*	41.7	41.6	41.5	41.3	41.1	40.8	40.5	40.3	40.0
REF.	*	28.4	28.4	28.3	28.2	28.3	28.4	28.3	28.2	28.2

STATIC LEVEL = 37.8

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01: "PHASE I DATA OUTPUTTING PROGRAM manometer board files 1-9"
11: dim L$(80),P$(3),Y$(80)for S=1 to 751:=""L$(S)next S:ind 1
21: dim A$(80),AC(29,9),R,D,L
31: fnt 2: " RUN NUMBER",f2.0,31x,"FLAP DEFLECTION ANGLE = ",f4.0
41: fnt 3,z,f5.1,2xifnt 6,z: " REF. * "
51: fnt 4,z,8x,f2.0,2x,"*",2xifnt 5: " STATIC LEVEL = ",f5.1
61: " -8 -6 -4 -2 0 2 4 6 8"+Y$
71: "PCL":ent "FILE NUMBER?",F:if F>9 or F<1:sto +0
81: trk 11fd: F:ld: F,A$,A(*),R,D,L
91: "STR":lurt 6: " -----"ifor S=1 to 5:lurt 6:next S
101: lurt 6: " KANSAS UNIVERSITY FLIGHT RESEARCH LAB":lurt 6
111: lurt 6: " DELTA P PROJECT - PHASE I"
121: lurt 6:lurt 6:lurt 6.2,R,D:lurt 6
131: lurt 6:A$lurt 6:lurt 6:lurt 6: " ",L$lurt 6
141: lurt 6: " MANOMETER BOARD READINGS (cm)"
151: lurt 6
161: lurt 6: " ",L$
171: lurt 6: " TUBE * ALPHA-ANGLE OF ATTACK (degrees)"
181: lurt 6: " NUMBER * ",Y$
191: lurt 6: " ",L$lurt 6: " *":l-B
201: for I=1 to 28:lurt 6.4,I:for J=1 to 9
211: lurt 6.3,AC(I,J):next J:lurt 6
221: if B=5:0+B:lurt 6: " *":wait 200
231: B+1+B:next I:lurt 6: " *"
241: lurt 6.6:for S=1 to 9:lurt 6.3,AC(29,S):next S:lurt 6:lurt 6: " *"
251: lurt 6: " ",L$lurt 6:lurt 6.5,L:for S=1 to 7
261: lurt 6:next S:ent "ANOTHER FILE?",P$:if cap(P$)="Y":sto "PCL"
271: end
*1386

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01: "DELTA P CORRECTIONS PROGRAM      3-4-91"
11: dim L$(80),P$(3),Y$(80)for S=1 to 75:"*"+L$(S)next Sifxd 1
21: dim A$(80),A(29,9),R,D,L
31: trk 1
41: for F=1 to 9:dspr "insert original tape & CONTINUE"lsto
51: fdf F:ldf F,A$,A(*),R,D,L
61: R=WD+VIL+U
71: for A=1 to 9
81: if R=1 or R=2 or R=3:A(29,A)+.3+A(29,A)
91: 1.00025A(29,A)-A(29,A)
101: A(1,A)-.01592+2A(29,A)+A(1,A):A(28,A)-.01592+2A(29,A)+A(28,A)
111: next A
121: dspr "insert new tape & CONTINUE"lsto
131: dspr "file number",F
141:
151:
161:
171: "PHASE I DATA OUTPUTTING PROGRAM":
181: fnt 2,"      RUN NUMBER",f2.0,31x,"FLAP DEFLECTION ANGLE = ",f4.0
191: fnt 3,z,f5.1,2xifnt 6,z,"      REF. *
201: fnt 4,z,8x,f2.0,2x,"*",2xifnt 5,"      STATIC LEVEL = ",f5.1
211: "      -6      -4      -2      0      2      4      6      8      10"+Y$
221: "STR"lurt 6,"      -----"lfor S=1 to 5lurt 6lnext S
231: wrt 6,"      KANSAS UNIVERSITY FLIGHT RESEARCH LAB"lurt 6
241: wrt 6,"      DELTA P PROJECT - PHASE I"
251: wrt 6lurt 6lurt 6.2,R,Dlurt 6
261: wrt 6,A$lurt 6lurt 6lurt 6lurt 6,"      ",L$
271: wrt 6,"      TUBE *      ALPHA-ANGLE OF ATTACK (degrees)"
281: wrt 6,"      NUMBER * ",Y$
291: wrt 6,"      ",L$lurt 6,"      *"+B
301: for I=1 to 28lurt 6.4,lfor J=1 to 9
311: wrt 6.3,A(I,J)lnext Jlurt 6
321: if B=5:0+8lurt 6,"      *"+wait 200
331: B+1+8lnext Ilurt 6,"      *"+lurt 6,"      "
341: wrt 6.6lfor S=1 to 9lurt 6.3,A(29,S)lnext Slurt 6lurt 6,"      "
351: wrt 6,"      *"+lurt 6,"      ",L$lurt 6lurt 6lurt 6.5,Llfor S=1 to 7
361: wrt 6lnext S
371: fdf F:ldf F,A$,A(*),R,D,L
381: next F
391: end
*13749

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4. PRESSURE COEFFICIENTS (NOT INTERPOLATED)

This chapter contains the nondimensional pressure coefficients at the 26 tap locations (13 upper, 13 lower) along the surface. Since the manometer tubes are all inclined to the same angle, the corrected readings can be input directly into the defining formula:

$$C_p = \frac{P_s - P_\infty}{q_\infty} \quad (4.1)$$

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KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

RUN NUMBER 1

FLAP DEFLECTION ANGLE = - 1

2 MARCH 1981

R. HRABAK, P. FINN

PRESSURE COEFFICIENT

TAP NUMBER	*	ALPHA-ANGLE OF ATTACK (degrees)								
	*	-8	-6	-4	-2	0	2	4	6	8
1	*	-2.48	-2.21	-1.95	-1.71	-1.46	-1.24	-1.04	-0.87	-0.69
2	*	-1.69	-1.59	-1.46	-1.38	-1.23	-1.04	-0.87	-0.76	-0.65
3	*	-1.05	-0.96	-0.85	-0.75	-0.63	-0.52	-0.43	-0.55	-0.29
4	*	-1.03	-0.96	-0.87	-0.79	-0.69	-0.61	-0.53	-0.47	-0.40
5	*	-0.78	-0.72	-0.65	-0.58	-0.51	-0.45	-0.38	-0.33	-0.27
6	*	-0.71	-0.65	-0.59	-0.53	-0.47	-0.42	-0.36	-0.32	-0.27
7	*	-0.63	-0.60	-0.55	-0.50	-0.44	-0.40	-0.35	-0.32	-0.28
8	*	-0.61	-0.58	-0.54	-0.50	-0.45	-0.42	-0.37	-0.35	-0.31
9	*	-0.58	-0.55	-0.51	-0.48	-0.43	-0.40	-0.37	-0.35	-0.31
10	*	-0.54	-0.52	-0.49	-0.47	-0.43	-0.40	-0.37	-0.35	-0.33
11	*	-0.52	-0.51	-0.48	-0.47	-0.44	-0.42	-0.38	-0.38	-0.36
12	*	-0.51	-0.50	-0.49	-0.49	-0.49	-0.50	-0.50	-0.51	-0.47
13	*	-0.49	-0.49	-0.47	-0.47	-0.50	-0.50	-0.47	-0.48	-0.45
14	*	-0.29	-0.46	-0.62	-0.78	-0.95	-1.12	-1.29	-1.45	-1.46
15	*	-0.17	-0.32	-0.46	-0.57	-0.59	-0.60	-0.70	-0.84	-0.88
16	*	0.02	-0.07	-0.15	-0.24	-0.32	-0.41	-0.49	-0.58	-0.61
17	*	0.11	0.04	-0.03	-0.10	-0.16	-0.23	-0.29	-0.37	-0.42
18	*	0.11	0.05	-0.01	-0.07	-0.12	-0.18	-0.24	-0.30	-0.37
19	*	0.15	0.11	0.05	-0.00	-0.04	-0.09	-0.14	-0.20	-0.27
20	*	0.16	0.12	0.07	0.02	-0.01	0.02	-0.09	-0.13	-0.22
21	*	0.21	0.18	0.14	0.10	0.07	0.03	-0.01	-0.04	-0.15
22	*	0.26	0.23	0.20	0.16	0.13	0.11	0.07	0.04	-0.08
23	*	0.32	0.29	0.26	0.23	0.21	0.18	0.15	0.12	-0.01
24	*	0.46	0.44	0.41	0.38	0.36	0.33	0.29	0.25	0.10
25	*	0.55	0.53	0.51	0.47	0.45	0.42	0.38	0.34	0.19
26	*	0.37	0.36	0.34	0.31	0.31	0.29	0.27	0.25	0.19

KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

RUN NUMBER 2

FLAP DEFLECTION ANGLE = -15

3 MARCH 1981

R. HRABAK, D. LEVY

PRESSURE COEFFICIENT

TAP NUMBER	*	ALPHA-ANGLE OF ATTACK (degrees)								
		-8	-6	-4	-2	0	2	4	6	8
1	*	-2.36	-2.11	-1.87	-1.62	-1.41	-1.20	-1.01	-0.83	-0.65
2	*	-1.62	-1.49	-1.38	-1.28	-1.16	-1.01	-0.86	-0.73	-0.59
3	*	-1.00	-0.91	-0.81	-0.70	-0.60	-0.51	-0.42	-0.34	-0.28
4	*	-1.70	-0.90	-0.83	-0.73	-0.66	-0.58	-0.51	-0.45	-0.38
5	*	-0.73	-0.67	-0.61	-0.53	-0.48	-0.42	-0.36	-0.31	-0.26
6	*	-0.66	-0.62	-0.56	-0.50	-0.45	-0.40	-0.35	-0.31	-0.26
7	*	-0.59	-0.56	-0.52	-0.46	-0.42	-0.38	-0.34	-0.30	-0.27
8	*	-0.58	-0.55	-0.51	-0.47	-0.43	-0.39	-0.36	-0.34	-0.31
9	*	-0.53	-0.51	-0.48	-0.44	-0.41	-0.38	-0.35	-0.33	-0.31
10	*	-0.50	-0.49	-0.46	-0.43	-0.40	-0.38	-0.36	-0.34	-0.33
11	*	-0.48	-0.47	-0.45	-0.42	-0.40	-0.38	-0.38	-0.37	-0.36
12	*	-0.46	-0.46	-0.47	-0.47	-0.47	-0.48	-0.48	-0.50	-0.50
13	*	-0.42	-0.42	-0.41	-0.42	-0.42	-0.43	-0.42	-0.42	-0.41
14	*	-0.36	-0.56	-0.70	-0.86	-1.04	-1.20	-1.53	-1.47	-1.59
15	*	-0.24	-0.38	-0.53	-0.63	-0.63	-0.82	-0.76	-0.88	-0.97
16	*	-0.04	-0.12	-0.21	-0.30	-0.38	-0.64	-0.54	-0.62	-0.68
17	*	0.05	-0.02	-0.09	-0.15	-0.22	-0.28	-0.34	-0.38	-0.46
18	*	0.05	-0.01	-0.07	-0.13	-0.19	-0.24	-0.28	-0.34	-0.38
19	*	0.10	0.01	-0.01	-0.05	-0.11	-0.15	-0.19	-0.24	-0.27
20	*	0.10	0.05	0.01	-0.03	-0.08	-0.12	-0.14	-0.18	-0.21
21	*	0.15	0.11	0.07	0.04	-0.00	-0.03	-0.07	-0.10	-0.12
22	*	0.19	0.15	0.12	0.09	0.06	0.03	0.00	-0.02	-0.05
23	*	0.23	0.21	0.18	0.15	0.12	0.10	0.08	0.05	0.03
24	*	0.36	0.33	0.31	0.29	0.26	0.24	-0.48	0.19	0.16
25	*	0.45	0.43	0.41	0.38	0.36	0.34	0.31	0.28	0.25
26	*	0.30	0.29	0.27	0.25	0.24	0.22	0.21	0.19	0.18

KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

RUN NUMBER 3

FLAP DEFLECTION ANGLE = -10

3 MARCH 1981

R. HRABAK, D. LEVY

PRESSURE COEFFICIENT

TAP	*	ALPHA-ANGLE OF ATTACK (degrees)								
NUMBER	*	-8	-6	-4	-2	0	2	4	6	8

1	*	-2.28	-2.01	-1.77	-1.53	-1.35	-1.15	-0.96	-0.77	-0.62
2	*	-1.55	-1.43	-1.31	-1.23	-1.12	-0.96	-0.82	-0.69	-0.57
3	*	-0.95	-0.86	-0.75	-0.65	-0.57	-0.47	-0.39	-0.31	-0.25
4	*	-0.93	-0.86	-0.77	-0.69	-0.62	-0.55	-0.48	-0.42	-0.34
5	*	-0.69	-0.63	-0.56	-0.49	-0.44	-0.39	-0.33	-0.28	-0.23
6	*	-0.63	-0.57	-0.51	-0.46	-0.42	-0.36	-0.32	-0.28	-0.24
7	*	-0.55	-0.51	-0.46	-0.42	-0.38	-0.34	-0.30	-0.27	-0.23
8	*	-0.54	-0.51	-0.46	-0.42	-0.39	-0.36	-0.33	-0.30	-0.27
9	*	-0.49	-0.46	-0.43	-0.39	-0.37	-0.34	-0.31	-0.29	-0.27
10	*	-0.46	-0.44	-0.41	-0.38	-0.36	-0.33	-0.31	-0.30	-0.28
11	*	-0.44	-0.42	-0.40	-0.37	-0.35	-0.34	-0.33	-0.32	-0.31
12	*	-0.41	-0.42	-0.42	-0.42	-0.42	-0.42	-0.43	-0.43	-0.43
13	*	-0.30	-0.29	-0.28	-0.27	-0.27	-0.26	-0.25	-0.25	-0.23
14	*	-0.45	-0.61	-0.78	-0.98	-1.12	-1.28	-1.44	-1.55	-1.68
15	*	-0.31	-0.46	-0.61	-0.71	-0.68	-0.72	-0.83	-0.95	-1.04
16	*	-0.09	-0.18	-0.27	-0.36	-0.44	-0.52	-0.60	-0.68	-0.40
17	*	-0.01	-0.08	-0.15	-0.21	-0.28	-0.34	-0.40	-0.46	-0.52
18	*	-0.01	-0.07	-0.14	-0.19	-0.25	-0.30	-0.35	-0.40	-0.45
19	*	0.03	-0.02	-0.07	-0.13	-0.17	-0.22	-0.25	-0.30	-0.34
20	*	0.03	-0.01	-0.06	-0.11	-0.15	-0.18	-0.22	-0.25	-0.28
21	*	0.08	0.04	-0.01	-0.04	-0.08	-0.11	-0.14	-0.17	-0.20
22	*	0.11	0.07	0.03	-0.00	-0.03	-0.05	-0.08	-0.11	-0.13
23	*	0.15	0.12	0.08	0.06	0.03	0.01	-0.01	-0.04	-0.06
24	*	0.23	0.21	0.19	0.17	0.15	0.13	0.11	0.08	0.06
25	*	0.33	0.31	0.28	0.26	0.24	0.22	0.20	0.17	0.14
26	*	0.22	0.21	0.19	0.21	0.16	0.14	0.13	0.12	0.10

KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

RUN NUMBER 4

FLAP DEFLECTION ANGLE = -5

4 MARCH 1981

R. HRABAK P. FINN

PRESSURE COEFFICIENT

TAP NUMBER	*	ALPHA-ANGLE OF ATTACK (degrees)								
	*	-8	-6	-4	-2	0	2	4	6	8

1	*	-2.13	-1.92	-1.68	-1.48	-1.26	-1.10	-0.92	-0.74	-0.57
2	*	-1.45	-1.34	-1.23	-1.17	-1.03	-0.90	-0.78	-0.65	-0.51
3	*	-0.88	-0.80	-0.70	-0.61	-0.51	-0.44	-0.36	-0.29	-0.22
4	*	-0.85	-0.79	-0.71	-0.64	-0.56	-0.51	-0.45	-0.37	-0.30
5	*	-0.61	-0.56	-0.50	-0.44	-0.38	-0.34	-0.29	-0.24	-0.18
6	*	-0.55	-0.50	-0.45	-0.40	-0.35	-0.32	-0.28	-0.23	-0.18
7	*	-0.48	-0.45	-0.40	-0.36	-0.32	-0.29	-0.26	-0.22	-0.18
8	*	-0.46	-0.43	-0.39	-0.35	-0.32	-0.30	-0.27	-0.23	-0.20
9	*	-0.41	-0.39	-0.36	-0.33	-0.30	-0.28	-0.26	-0.23	-0.20
10	*	-0.38	-0.37	-0.34	-0.31	-0.28	-0.27	-0.25	-0.23	-0.20
11	*	-0.37	-0.35	-0.32	-0.30	-0.28	-0.27	-0.26	-0.24	-0.23
12	*	-0.33	-0.33	-0.32	-0.30	-0.30	-0.30	-0.29	-0.27	-0.26
13	*	-0.19	-0.18	-0.17	-0.16	-0.15	-0.14	-0.13	-0.11	-0.10
14	*	-0.51	-0.70	-0.86	-1.02	-1.18	-1.38	-1.53	-1.63	-1.80
15	*	-0.37	-0.54	-0.67	-0.75	-0.71	-0.80	-0.90	-1.02	-1.13
16	*	-0.15	-0.25	-0.34	-0.42	-0.51	-0.60	-0.67	-0.74	-0.83
17	*	-0.06	-0.14	-0.21	-0.27	-0.34	-0.40	-0.46	-0.52	-0.60
18	*	-0.07	-0.14	-0.20	-0.25	-0.32	-0.37	-0.41	-0.46	-0.52
19	*	-0.03	-0.09	-0.14	-0.19	-0.24	-0.28	-0.32	-0.37	-0.41
20	*	-0.04	-0.09	-0.14	-0.18	-0.23	-0.26	-0.29	-0.32	-0.36
21	*	-0.00	-0.04	-0.09	-0.12	-0.16	-0.19	-0.22	-0.25	-0.29
22	*	0.02	-0.02	-0.05	-0.08	-0.12	-0.15	-0.17	-0.19	-0.22
23	*	0.05	0.01	-0.02	-0.04	-0.08	-0.10	-0.12	-0.14	-0.17
24	*	0.09	0.07	0.05	0.03	0.01	-0.01	-0.03	-0.04	-0.07
25	*	0.18	0.16	0.14	0.11	0.08	0.07	0.05	0.04	0.01
26	*	0.15	0.13	0.11	0.09	0.07	0.06	0.05	0.03	0.01

KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

RUN NUMBER 5

FLAP DEFLECTION ANGLE = 0

6 MARCH 1981

R. HRABACK, D. LEVY

PRESSURE COEFFICIENT

TAP NUMBER	*	ALPHA-ANGLE OF ATTACK (degrees)								
	*	-8	-6	-4	-2	0	2	4	6	8
1	*	-2.05	-1.82	-1.59	-1.42	-1.23	-1.05	-0.87	-0.68	-0.51
2	*	-1.37	-1.28	-1.18	-1.11	-1.00	-0.87	-0.73	-0.59	-0.47
3	*	-0.80	-0.72	-0.62	-0.55	-0.46	-0.39	-0.30	-0.23	-0.17
4	*	-0.79	-0.73	-0.65	-0.59	-0.53	-0.47	-0.40	-0.32	-0.25
5	*	-0.55	-0.50	-0.43	-0.39	-0.34	-0.30	-0.24	-0.19	-0.13
6	*	-0.49	-0.44	-0.39	-0.35	-0.31	-0.27	-0.23	-0.18	-0.13
7	*	-0.41	-0.38	-0.34	-0.31	-0.28	-0.25	-0.21	-0.17	-0.12
8	*	-0.38	-0.36	-0.32	-0.29	-0.27	-0.24	-0.21	-0.18	-0.14
9	*	-0.34	-0.32	-0.28	-0.26	-0.24	-0.22	-0.19	-0.17	-0.13
10	*	-0.30	-0.27	-0.25	-0.23	-0.21	-0.19	-0.18	-0.15	-0.12
11	*	-0.27	-0.25	-0.22	-0.20	-0.20	-0.18	-0.17	-0.15	-0.13
12	*	-0.14	-0.13	-0.11	-0.11	-0.10	-0.08	-0.06	-0.04	-0.01
13	*	-0.05	-0.04	-0.03	-0.02	-0.01	0.01	0.02	0.04	0.06
14	*	-0.61	-0.77	-0.94	-1.10	-1.27	-1.43	-1.60	-1.71	-1.89
15	*	-0.47	-0.61	-0.74	-0.80	-0.76	-0.85	-0.97	-1.10	-1.21
16	*	-0.23	-0.32	-0.40	-0.48	-0.56	-0.61	-0.73	-0.81	-0.91
17	*	-0.14	-0.20	-0.27	-0.33	-0.37	-0.46	-0.52	-0.59	-0.67
18	*	-0.15	-0.21	-0.26	-0.32	-0.37	-0.42	-0.48	-0.53	-0.60
19	*	-0.11	-0.16	-0.21	-0.25	-0.30	-0.35	-0.39	-0.44	-0.49
20	*	-0.12	-0.17	-0.21	-0.25	-0.29	-0.32	-0.36	-0.40	-0.45
21	*	-0.09	-0.13	-0.17	-0.20	-0.24	-0.27	-0.30	-0.34	-0.38
22	*	-0.08	-0.12	-0.15	-0.18	-0.21	-0.23	-0.26	-0.29	-0.33
23	*	-0.06	-0.08	-0.12	-0.15	-0.17	-0.20	-0.22	-0.25	-0.28
24	*	-0.06	-0.08	-0.10	-0.12	-0.13	-0.15	-0.16	-0.18	-0.21
25	*	-0.01	-0.04	-0.06	-0.09	-0.11	-0.13	-0.14	-0.17	-0.19
26	*	0.04	0.02	-0.00	-0.02	-0.04	-0.05	-0.06	-0.08	-0.11

KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

RUN NUMBER 6

FLAP DEFLECTION ANGLE = 5

4 MARCH 1981

R. HRABAK, D. LEVY

PRESSURE COEFFICIENT

TAP NUMBER	ALPHA-ANGLE OF ATTACK (degrees)								
	-8	-6	-4	-2	0	2	4	6	8
1	* -1.95	* -1.75	* -1.55	* -1.36	* -1.18	* -0.99	* -0.81	* -0.61	* -0.44
2	* -1.31	* -1.22	* -1.15	* -1.08	* -0.97	* -0.81	* -0.68	* -0.52	* -0.41
3	* -0.74	* -0.68	* -0.59	* -0.51	* -0.43	* -0.34	* -0.26	* -0.18	* -0.13
4	* -0.73	* -0.68	* -0.61	* -0.55	* -0.49	* -0.42	* -0.35	* -0.27	* -0.20
5	* -0.49	* -0.45	* -0.39	* -0.35	* -0.31	* -0.25	* -0.20	* -0.13	* -0.08
6	* -0.43	* -0.39	* -0.35	* -0.31	* -0.27	* -0.23	* -0.18	* -0.13	* -0.08
7	* -0.36	* -0.33	* -0.29	* -0.26	* -0.23	* -0.19	* -0.15	* -0.11	* -0.07
8	* -0.33	* -0.30	* -0.26	* -0.24	* -0.21	* -0.19	* -0.15	* -0.11	* -0.08
9	* -0.27	* -0.25	* -0.22	* -0.20	* -0.18	* -0.16	* -0.12	* -0.09	* -0.06
10	* -0.22	* -0.20	* -0.17	* -0.16	* -0.14	* -0.12	* -0.10	* -0.07	* -0.05
11	* -0.18	* -0.16	* -0.14	* -0.13	* -0.12	* -0.11	* -0.09	* -0.07	* -0.05
12	* 0.09	* 0.11	* 0.13	* 0.14	* 0.15	* 0.16	* 0.18	* 0.19	* 0.20
13	* 0.10	* 0.11	* 0.12	* 0.13	* 0.14	* 0.16	* 0.17	* 0.18	* 0.19
14	* -0.68	* -0.83	* -0.99	* -1.15	* -1.32	* -1.51	* -1.68	* -1.80	* -2.02
15	* -0.53	* -0.67	* -0.80	* -0.89	* -0.82	* -0.90	* -1.03	* -1.17	* -1.32
16	* -0.28	* -0.36	* -0.44	* -0.53	* -0.61	* -0.70	* -0.79	* -0.89	* -1.00
17	* -0.18	* -0.25	* -0.31	* -0.38	* -0.44	* -0.51	* -0.58	* -0.67	* -0.76
18	* -0.22	* -0.26	* -0.32	* -0.37	* -0.43	* -0.48	* -0.54	* -0.61	* -0.69
19	* -0.17	* -0.22	* -0.26	* -0.31	* -0.36	* -0.44	* -0.46	* -0.52	* -0.59
20	* -0.20	* -0.24	* -0.28	* -0.32	* -0.36	* -0.40	* -0.44	* -0.49	* -0.55
21	* -0.17	* -0.20	* -0.24	* -0.28	* -0.31	* -0.35	* -0.39	* -0.43	* -0.48
22	* -0.17	* -0.20	* -0.23	* -0.26	* -0.29	* -0.32	* -0.36	* -0.40	* -0.44
23	* -0.17	* -0.19	* -0.22	* -0.24	* -0.27	* -0.30	* -0.32	* -0.37	* -0.40
24	* -0.20	* -0.22	* -0.23	* -0.26	* -0.27	* -0.29	* -0.31	* -0.34	* -0.37
25	* -0.25	* -0.28	* -0.29	* -0.31	* -0.32	* -0.34	* -0.36	* -0.38	* -0.40
26	* -0.09	* -0.10	* -0.12	* -0.14	* -0.15	* -0.16	* -0.18	* -0.21	* -0.23

KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

RUN NUMBER 7

FLAP DEFLECTION ANGLE = 10

4 MARCH 1981

R. HRABAK, D. LEVY

PRESSURE COEFFICIENT

TAP NUMBER	*	-8	-6	-4	-2	0	2	4	6	8
1	*	-1.87	-1.66	-1.49	-1.31	-1.12	-0.92	-0.74	-0.55	-0.38
2	*	-1.21	-1.15	-1.09	-1.03	-0.91	-0.75	-0.62	-0.48	-0.36
3	*	-0.68	-0.62	-0.54	-0.46	-0.38	-0.29	-0.22	-0.14	-0.09
4	*	-0.67	-0.62	-0.56	-0.50	-0.44	-0.36	-0.30	-0.22	-0.15
5	*	-0.44	-0.39	-0.35	-0.30	-0.26	-0.20	-0.15	-0.09	-0.03
6	*	-0.38	-0.33	-0.30	-0.26	-0.22	-0.17	-0.13	-0.08	-0.04
7	*	-0.29	-0.27	-0.23	-0.21	-0.17	-0.13	-0.10	-0.05	-0.01
8	*	-0.26	-0.23	-0.20	-0.18	-0.15	-0.12	-0.09	-0.05	-0.02
9	*	-0.20	-0.17	-0.15	-0.13	-0.11	-0.08	-0.05	-0.02	0.01
10	*	-0.14	-0.11	-0.10	-0.08	-0.06	-0.04	-0.02	0.01	0.03
11	*	-0.09	-0.06	-0.05	-0.04	-0.03	-0.00	0.01	0.04	0.05
12	*	0.26	0.29	0.31	0.32	0.34	0.38	0.36	0.38	0.40
13	*	0.21	0.23	0.24	0.25	0.26	0.26	0.31	0.28	0.29
14	*	-0.73	-0.89	-1.06	-1.22	-1.40	-1.58	-1.41	-1.92	-2.19
15	*	-0.59	-0.72	-0.87	-0.95	-0.89	-0.96	-1.11	-1.26	-1.44
16	*	-0.33	-0.41	-0.49	-0.58	-0.67	-0.76	-0.86	-0.97	-1.11
17	*	-0.23	-0.30	-0.36	-0.43	-0.50	-0.57	-0.65	-0.74	-0.85
18	*	-0.26	-0.31	-0.38	-0.46	-0.49	-0.55	-0.62	-0.69	-0.78
19	*	-0.23	-0.27	-0.33	-0.37	-0.43	-0.48	-0.54	-0.60	-0.68
20	*	-0.26	-0.30	-0.34	-0.38	-0.43	-0.47	-0.52	-0.57	-0.63
21	*	-0.24	-0.28	-0.32	-0.35	-0.39	-0.43	-0.48	-0.52	-0.58
22	*	-0.26	-0.28	-0.32	-0.35	-0.38	-0.41	-0.46	-0.50	-0.54
23	*	-0.26	-0.29	-0.32	-0.35	-0.37	-0.40	-0.44	-0.47	-0.51
24	*	-0.35	-0.37	-0.39	-0.41	-0.43	-0.45	-0.47	-0.49	-0.51
25	*	-0.46	-0.47	-0.49	-0.49	-0.50	-0.51	-0.53	-0.54	-0.55
26	*	-0.22	-0.23	-0.24	-0.26	-0.27	-0.29	-0.31	-0.33	-0.35

KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

RUN NUMBER 8

FLAP DEFLECTION ANGLE = 15

6 MARCH 1981

R. HRABAK, P. FINN

PRESSURE COEFFICIENT

TAP NUMBER	*	ALPHA-ANGLE OF ATTACK (degrees)								
	*	-8	-6	-4	-2	0	2	4	6	8
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
1	*	-1.84	-1.61	-1.43	-1.25	-1.07	-0.87	-0.69	-0.48	-0.33
2	*	-1.20	-1.09	-1.04	-0.97	-0.86	-0.69	-0.57	-0.41	-0.31
3	*	-0.66	-0.57	-0.50	-0.43	-0.35	-0.25	-0.18	-0.10	-0.06
4	*	-0.64	-0.57	-0.51	-0.45	-0.39	-0.32	-0.26	-0.17	-0.11
5	*	-0.40	-0.35	-0.31	-0.26	-0.21	-0.16	-0.11	-0.04	0.00
6	*	-0.34	-0.29	-0.26	-0.21	-0.18	-0.14	-0.09	-0.04	0.00
7	*	-0.25	-0.21	-0.18	-0.15	-0.12	-0.08	-0.05	-0.00	0.03
8	*	-0.20	-0.17	-0.15	-0.12	-0.10	-0.07	-0.04	0.00	0.02
9	*	-0.13	-0.10	-0.09	-0.06	-0.04	-0.02	0.01	0.04	0.06
10	*	-0.07	-0.04	-0.03	-0.01	0.01	0.03	0.04	0.07	0.09
11	*	-0.00	0.02	0.03	0.05	0.06	0.08	0.09	0.11	0.12
12	*	0.38	0.41	0.43	0.45	0.47	0.49	0.50	0.50	0.52
13	*	0.31	0.32	0.33	0.34	0.35	0.35	0.36	0.36	0.36
14	*	-0.80	-0.93	-1.10	-1.26	-1.45	-1.65	-1.82	-1.95	-2.20
15	*	-0.64	-0.77	-0.90	-0.98	-0.93	-1.02	-1.18	-1.29	-1.46
16	*	-0.38	-0.45	-0.53	-0.61	-0.71	-0.81	-0.92	-1.01	-1.14
17	*	-0.27	-0.33	-0.40	-0.46	-0.54	-0.62	-0.71	-0.78	-0.88
18	*	-0.31	-0.36	-0.41	-0.47	-0.53	-0.60	-0.68	-0.74	-0.82
19	*	-0.28	-0.32	-0.37	-0.42	-0.47	-0.53	-0.59	-0.65	-0.72
20	*	-0.31	-0.34	-0.39	-0.43	-0.47	-0.52	-0.58	-0.62	-0.69
21	*	-0.31	-0.33	-0.37	-0.40	-0.45	-0.49	-0.54	-0.58	-0.63
22	*	-0.33	-0.35	-0.38	-0.41	-0.45	-0.48	-0.52	-0.55	-0.60
23	*	-0.35	-0.37	-0.39	-0.41	-0.45	-0.48	-0.51	-0.54	-0.57
24	*	-0.49	-0.49	-0.50	-0.51	-0.53	-0.54	-0.56	-0.56	-0.58
25	*	-0.62	-0.61	-0.61	-0.61	-0.62	-0.62	-0.63	-0.62	-0.62
26	*	-0.34	-0.34	-0.36	-0.36	-0.38	-0.39	-0.42	-0.43	-0.46

KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

RUN NUMBER 9

FLAP DEFLECTION ANGLE = 20

6 MARCH 1981

R. HRABAK, P. FINN

PRESSURE COEFFICIENT

TAP	*	ALPHA-ANGLE OF ATTACK (degrees)								
NUMBER	*	-8	-6	-4	-2	0	2	4	6	8

1	*	-1.70	-1.53	-1.38	-1.20	-1.01	-0.80	-0.62	-0.44	-0.28
2	*	-1.06	-1.03	-0.99	-0.94	-0.80	-0.64	-0.49	-0.37	-0.26
3	*	-0.58	-0.54	-0.47	-0.39	-0.30	-0.21	-0.13	-0.07	-0.03
4	*	-0.56	-0.52	-0.47	-0.41	-0.34	-0.27	-0.24	-0.13	-0.07
5	*	-0.34	-0.31	-0.27	-0.22	-0.17	-0.11	-0.06	-0.00	0.04
6	*	-0.28	-0.24	-0.21	-0.17	-0.13	-0.09	-0.04	0.00	0.04
7	*	-0.18	-0.17	-0.13	-0.10	-0.07	-0.03	0.01	0.02	0.08
8	*	-0.14	-0.12	-0.09	-0.07	-0.04	-0.01	0.02	0.05	0.08
9	*	-0.07	-0.04	-0.02	-0.00	0.03	0.04	0.07	0.10	0.12
10	*	0.01	0.02	0.05	0.06	0.08	0.10	0.12	0.14	0.16
11	*	0.07	0.09	0.11	0.13	0.15	0.16	0.17	0.19	0.20
12	*	0.39	0.47	0.52	0.55	0.57	0.59	0.61	0.63	0.64
13	*	0.36	0.40	0.42	0.43	0.44	0.44	0.45	0.45	0.45
14	*	-0.81	-0.96	-1.12	-1.30	-1.50	-1.70	-1.84	-2.05	-2.24
15	*	-0.65	-0.80	-0.94	-1.03	-0.97	-1.06	-1.22	-1.36	-1.49
16	*	-0.39	-0.47	-0.55	-0.65	-0.74	-0.85	-0.96	-1.07	-1.17
17	*	-0.30	-0.36	-0.43	-0.50	-0.57	-0.66	-0.75	-0.84	-0.91
18	*	-0.33	-0.39	-0.44	-0.51	-0.57	-0.64	-0.71	-0.78	-0.85
19	*	-0.30	-0.35	-0.40	-0.45	-0.51	-0.57	-0.63	-0.69	-0.75
20	*	-0.34	-0.38	-0.42	-0.46	-0.51	-0.56	-0.62	-0.67	-0.71
21	*	-0.34	-0.37	-0.40	-0.44	-0.48	-0.53	-0.58	-0.62	-0.66
22	*	-0.36	-0.39	-0.41	-0.45	-0.48	-0.52	-0.56	-0.60	-0.63
23	*	-0.39	-0.41	-0.42	-0.45	-0.48	-0.51	-0.54	-0.57	-0.57
24	*	-0.53	-0.53	-0.54	-0.55	-0.55	-0.57	-0.57	-0.58	-0.59
25	*	-0.71	-0.69	-0.68	-0.68	-0.67	-0.66	-0.65	-0.65	-0.64
26	*	-0.48	-0.49	-0.49	-0.51	-0.52	-0.54	-0.55	-0.57	-0.58

```

0: "PHASE I DELTA C SUB P OUTPUTTING PROGRAM      files 11+19."
1: dim L$(80),P$(3),Y$(80)for S=1 to 75:" "+L$(S)next Sifxd 1
2: dim D(13,9),Z(13),R,D
3: fnt 2,"      RUN NUMBER",f2.0,31,"FLAP DEFLECTION ANGLE = ",f4.0
4: fnt 3,z,f5.2,2x
5: fnt 4,z,f4.0,f6.3,2x,"*",2xfnt 5,5x,"FILE NUMBER ",f2.0
6: "  -8      -6      -4      -2      0      2      4      6      8"+Y$
7: "PCL"tent "FILE NUMBER?",F1if F>19 or F<11:to +0
8: trk 11fdf F1df F,D(*),Z(*),R,D
9: "STR"turt 6,"      -----"ifor S=1 to 5turt 6next S
10: wrt 6,"      KANSAS UNIVERSITY FLIGHT RESEARCH LAB"turt 6
11: wrt 6,"      DELTA P PROJECT - PHASE I"
12: wrt 6turt 6turt 6.2,R,Dturt 6turt 6.5,Fturt 6turt 6turt 6,"  ",L$
13: wrt 6
14: wrt 6,"      CHANGE IN PRESSURE COEFFICIENT"
15: wrt 6,"      INTERPOLATED"
16: wrt 6turt 6,"  ",L$
17: wrt 6,"      TAP      *      ALPHA-ANGLE OF ATTACK (degrees)"
18: wrt 6,"      x/c      *      Y$
19: wrt 6,"  ",L$ifort 6,"      *"11+B
20: for I=1 to 13turt 6.4,Z(I)for J=1 to 9
21: wrt 6.3,D(I,J)next Jturt 6turt 6,"      *"
22: if B=510+Bturt 6,"      *"
23: B+1-Bnext I
24: wrt 6,"      . *"turt 6,"  ",L$ifort 6turt 6ifor S=1 to 11
25: wrt 6next Stent "ANOTHER FILE?",P$if zap(P$)="Y"to "PCL"
26: end
*1408

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5. PRESSURE COEFFICIENTS (INTERPOLATED)

This chapter contains the pressure coefficients interpolated so that the upper and lower chordwise locations are identical.

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KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT -- PHASE I

RUN NUMBER 1

FLAP DEFLECTION ANGLE = -20

2 MARCH 1981

R. HRABAK, P. FINN

PRESSURE COEFFICIENT

-INTERPOLATED-

TUBE	*	ALPHA-ANGLE OF ATTACK (degrees)								
NUMBER	*	-8	-6	-4	-2	0	2	4	6	8

2	*	-1.97	-1.81	-1.63	-1.50	-1.31	-1.11	-0.93	-0.80	-0.66
3	*	-1.28	-1.19	-1.07	-0.98	-0.85	-0.71	-0.59	-0.63	-0.42
4	*	-1.04	-0.96	-0.86	-0.77	-0.67	-0.58	-0.49	-0.50	-0.36
5	*	-0.87	-0.81	-0.73	-0.66	-0.58	-0.51	-0.44	-0.38	-0.32
6	*	-0.73	-0.68	-0.61	-0.55	-0.48	-0.43	-0.37	-0.33	-0.27
7	*	-0.66	-0.62	-0.56	-0.51	-0.45	-0.41	-0.35	-0.32	-0.28
8	*	-0.62	-0.59	-0.54	-0.50	-0.45	-0.41	-0.37	-0.34	-0.30
9	*	-0.59	-0.56	-0.52	-0.49	-0.44	-0.41	-0.37	-0.35	-0.31
10	*	-0.55	-0.53	-0.49	-0.47	-0.43	-0.40	-0.37	-0.35	-0.32
11	*	-0.53	-0.51	-0.48	-0.47	-0.44	-0.41	-0.38	-0.37	-0.35
12	*	-0.51	-0.50	-0.48	-0.49	-0.47	-0.46	-0.45	-0.45	-0.42
13	*	-0.50	-0.50	-0.49	-0.49	-0.50	-0.50	-0.49	-0.51	-0.47
14	*	-0.49	-0.49	-0.47	-0.47	-0.50	-0.50	-0.47	-0.48	-0.45
15	*	-0.29	-0.46	-0.62	-0.78	-0.95	-1.12	-1.29	-1.45	-1.46
16	*	-0.17	-0.32	-0.46	-0.57	-0.59	-0.60	-0.70	-0.84	-0.88
17	*	0.02	-0.07	-0.15	-0.24	-0.32	-0.41	-0.49	-0.58	-0.61
18	*	0.11	0.04	-0.03	-0.10	-0.16	-0.23	-0.29	-0.37	-0.42
19	*	0.11	0.05	-0.01	-0.07	-0.12	-0.18	-0.24	-0.30	-0.37
20	*	0.15	0.11	0.05	-0.00	-0.04	-0.09	-0.14	-0.20	-0.27
21	*	0.16	0.12	0.07	0.02	-0.01	0.02	-0.09	-0.13	-0.22
22	*	0.21	0.18	0.14	0.10	0.07	0.03	-0.01	-0.04	-0.15
23	*	0.26	0.23	0.20	0.16	0.13	0.11	0.07	0.04	-0.08
24	*	0.32	0.29	0.26	0.23	0.21	0.18	0.15	0.12	-0.01
25	*	0.46	0.44	0.41	0.38	0.36	0.33	0.29	0.25	0.10
26	*	0.55	0.53	0.51	0.47	0.45	0.42	0.38	0.34	0.19
27	*	0.39	0.38	0.36	0.33	0.33	0.31	0.28	0.26	0.19

KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

RUN NUMBER 2

FLAP DEFLECTION ANGLE = -15

3 MARCH 1981

R. HRABAK, D. LEVY

PRESSURE COEFFICIENT

-INTERPOLATED-

TUBE	*	ALPHA-ANGLE OF ATTACK (degrees)								
NUMBER	*	-8	-6	-4	-2	0	2	4	6	8

2	*	-1.88	-1.71	-1.55	-1.40	-1.25	-1.08	-0.91	-0.77	-0.61
3	*	-1.22	-1.12	-1.02	-0.91	-0.81	-0.69	-0.58	-0.49	-0.39
4	*	-1.44	-0.91	-0.82	-0.72	-0.64	-0.56	-0.47	-0.41	-0.34
5	*	-1.08	-0.76	-0.69	-0.61	-0.54	-0.48	-0.42	-0.36	-0.30
6	*	-0.68	-0.64	-0.58	-0.51	-0.46	-0.41	-0.35	-0.31	-0.26
7	*	-0.62	-0.58	-0.53	-0.47	-0.43	-0.38	-0.34	-0.31	-0.27
8	*	-0.58	-0.56	-0.51	-0.46	-0.42	-0.39	-0.35	-0.32	-0.29
9	*	-0.55	-0.53	-0.49	-0.45	-0.41	-0.38	-0.35	-0.33	-0.31
10	*	-0.51	-0.50	-0.47	-0.43	-0.40	-0.38	-0.36	-0.34	-0.32
11	*	-0.49	-0.48	-0.46	-0.42	-0.40	-0.38	-0.37	-0.36	-0.35
12	*	-0.47	-0.46	-0.46	-0.45	-0.44	-0.44	-0.44	-0.44	-0.44
13	*	-0.45	-0.45	-0.46	-0.47	-0.47	-0.47	-0.48	-0.49	-0.49
14	*	-0.42	-0.42	-0.41	-0.42	-0.42	-0.43	-0.42	-0.42	-0.41
15	*	-0.36	-0.56	-0.70	-0.86	-1.04	-1.20	-1.53	-1.47	-1.59
16	*	-0.24	-0.38	-0.53	-0.63	-0.63	-0.82	-0.76	-0.88	-0.97
17	*	-0.04	-0.12	-0.21	-0.30	-0.38	-0.64	-0.54	-0.62	-0.68
18	*	0.05	-0.02	-0.09	-0.15	-0.22	-0.28	-0.34	-0.38	-0.46
19	*	0.05	-0.01	-0.07	-0.13	-0.19	-0.24	-0.28	-0.34	-0.38
20	*	0.10	0.01	-0.01	-0.05	-0.11	-0.15	-0.19	-0.24	-0.27
21	*	0.10	0.05	0.01	-0.03	-0.08	-0.12	-0.14	-0.18	-0.21
22	*	0.15	0.11	0.07	0.04	-0.00	-0.03	-0.07	-0.10	-0.12
23	*	0.19	0.15	0.12	0.09	0.06	0.03	0.00	-0.02	-0.05
24	*	0.23	0.21	0.18	0.15	0.12	0.10	0.08	0.05	0.03
25	*	0.36	0.33	0.31	0.29	0.26	0.24	-0.48	0.19	0.16
26	*	0.45	0.43	0.41	0.38	0.36	0.34	0.31	0.28	0.25
27	*	0.32	0.31	0.29	0.27	0.26	0.24	0.22	0.21	0.19

KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

RUN NUMBER 3

FLAP DEFLECTION ANGLE = -10

3 MARCH 1981

R. HRABAK, D. LEVY

PRESSURE COEFFICIENT

-INTERPOLATED-

TUBE	*	ALPHA-ANGLE OF ATTACK (degrees)								
NUMBER	*	-8	-6	-4	-2	0	2	4	6	8

	*									
2	*	-1.81	-1.64	-1.48	-1.34	-1.20	-1.03	-0.87	-0.72	-0.58
3	*	-1.17	-1.07	-0.95	-0.86	-0.77	-0.65	-0.55	-0.45	-0.37
4	*	-0.94	-0.86	-0.76	-0.67	-0.60	-0.52	-0.45	-0.38	-0.31
5	*	-0.78	-0.71	-0.64	-0.57	-0.51	-0.44	-0.39	-0.33	-0.27
	*									
6	*	-0.65	-0.59	-0.53	-0.47	-0.43	-0.37	-0.33	-0.28	-0.23
7	*	-0.58	-0.54	-0.48	-0.43	-0.39	-0.35	-0.31	-0.28	-0.23
8	*	-0.55	-0.51	-0.46	-0.42	-0.39	-0.35	-0.32	-0.29	-0.25
9	*	-0.51	-0.48	-0.44	-0.40	-0.38	-0.34	-0.32	-0.29	-0.27
10	*	-0.48	-0.45	-0.42	-0.38	-0.36	-0.33	-0.31	-0.30	-0.27
	*									
11	*	-0.45	-0.43	-0.40	-0.38	-0.36	-0.34	-0.32	-0.31	-0.30
12	*	-0.43	-0.42	-0.41	-0.40	-0.39	-0.39	-0.38	-0.38	-0.38
13	*	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40	-0.41	-0.41
14	*	-0.30	-0.29	-0.28	-0.27	-0.27	-0.26	-0.25	-0.25	-0.23
15	*	-0.45	-0.61	-0.78	-0.98	-1.12	-1.28	-1.44	-1.55	-1.68
	*									
16	*	-0.31	-0.46	-0.61	-0.71	-0.68	-0.72	-0.83	-0.95	-1.04
17	*	-0.09	-0.18	-0.27	-0.36	-0.44	-0.52	-0.60	-0.68	-0.40
18	*	-0.01	-0.08	-0.15	-0.21	-0.28	-0.34	-0.40	-0.46	-0.52
19	*	-0.01	-0.07	-0.14	-0.19	-0.25	-0.30	-0.35	-0.40	-0.45
20	*	0.03	-0.02	-0.07	-0.13	-0.17	-0.22	-0.25	-0.30	-0.34
	*									
21	*	0.03	-0.01	-0.06	-0.11	-0.15	-0.18	-0.22	-0.25	-0.28
22	*	0.08	0.04	-0.01	-0.04	-0.08	-0.11	-0.14	-0.17	-0.20
23	*	0.11	0.07	0.03	-0.00	-0.03	-0.05	-0.08	-0.11	-0.13
24	*	0.15	0.12	0.08	0.06	0.03	0.01	-0.01	-0.04	-0.06
25	*	0.23	0.21	0.19	0.17	0.15	0.13	0.11	0.08	0.06
	*									
26	*	0.33	0.31	0.28	0.26	0.24	0.22	0.20	0.17	0.14
27	*	0.24	0.22	0.20	0.22	0.17	0.15	0.14	0.12	0.11
	*									

KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

RUN NUMBER 4

FLAP DEFLECTION ANGLE = -5

4 MARCH 1981

R. HRABAK P. FINN

PRESSURE COEFFICIENT

-INTERPOLATED-

TUBE NUMBER	* *	ALPHA-ANGLE OF ATTACK (degrees)								
		-8	-6	-4	-2	0	2	4	6	8
2	*	-1.70	-1.55	-1.39	-1.28	-1.11	-0.97	-0.83	-0.68	-0.53
3	*	-1.09	-1.00	-0.89	-0.82	-0.70	-0.60	-0.51	-0.42	-0.32
4	*	-0.86	-0.80	-0.70	-0.63	-0.55	-0.48	-0.41	-0.34	-0.27
5	*	-0.70	-0.65	-0.58	-0.52	-0.45	-0.40	-0.35	-0.29	-0.23
6	*	-0.57	-0.52	-0.47	-0.42	-0.36	-0.33	-0.28	-0.23	-0.18
7	*	-0.50	-0.47	-0.42	-0.38	-0.33	-0.30	-0.27	-0.22	-0.18
8	*	-0.47	-0.44	-0.39	-0.36	-0.32	-0.30	-0.27	-0.23	-0.19
9	*	-0.43	-0.40	-0.37	-0.34	-0.31	-0.29	-0.26	-0.23	-0.20
10	*	-0.40	-0.37	-0.34	-0.31	-0.29	-0.27	-0.25	-0.23	-0.20
11	*	-0.38	-0.36	-0.33	-0.30	-0.28	-0.27	-0.26	-0.23	-0.22
12	*	-0.35	-0.34	-0.32	-0.30	-0.29	-0.29	-0.28	-0.26	-0.25
13	*	-0.31	-0.31	-0.30	-0.28	-0.28	-0.28	-0.27	-0.25	-0.24
14	*	-0.19	-0.18	-0.17	-0.16	-0.15	-0.14	-0.13	-0.11	-0.10
15	*	-0.51	-0.70	-0.86	-1.02	-1.18	-1.38	-1.53	-1.63	-1.80
16	*	-0.37	-0.54	-0.67	-0.75	-0.71	-0.80	-0.90	-1.02	-1.13
17	*	-0.15	-0.25	-0.34	-0.42	-0.51	-0.60	-0.67	-0.74	-0.83
18	*	-0.06	-0.14	-0.21	-0.27	-0.34	-0.40	-0.46	-0.52	-0.60
19	*	-0.07	-0.14	-0.20	-0.25	-0.32	-0.37	-0.41	-0.46	-0.52
20	*	-0.03	-0.09	-0.14	-0.19	-0.24	-0.28	-0.32	-0.37	-0.41
21	*	-0.04	-0.09	-0.14	-0.18	-0.23	-0.26	-0.29	-0.32	-0.36
22	*	-0.00	-0.04	-0.09	-0.12	-0.16	-0.19	-0.22	-0.25	-0.29
23	*	0.02	-0.02	-0.05	-0.08	-0.12	-0.15	-0.17	-0.19	-0.22
24	*	0.05	0.01	-0.02	-0.04	-0.08	-0.10	-0.12	-0.14	-0.17
25	*	0.09	0.07	0.05	0.03	0.01	-0.01	-0.03	-0.04	-0.07
26	*	0.18	0.16	0.14	0.11	0.08	0.07	0.05	0.04	0.01
27	*	0.15	0.13	0.11	0.09	0.07	0.06	0.05	0.03	0.01

KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

RUN NUMBER 5

FLAP DEFLECTION ANGLE = 0

6 MARCH 1981

R. HRABACK, D. LEVY

PRESSURE COEFFICIENT

-INTERPOLATED-

TUBE	*	ALPHA-ANGLE OF ATTACK (degrees)								
NUMBER	*	-8	-6	-4	-2	0	2	4	6	8

2	*	-1.61	-1.47	-1.33	-1.22	-1.08	-0.94	-0.78	-0.63	-0.49
3	*	-1.01	-0.93	-0.83	-0.75	-0.66	-0.56	-0.46	-0.36	-0.28
4	*	-0.79	-0.73	-0.64	-0.57	-0.50	-0.44	-0.36	-0.29	-0.22
5	*	-0.64	-0.58	-0.51	-0.46	-0.41	-0.36	-0.30	-0.24	-0.18
6	*	-0.51	-0.46	-0.41	-0.37	-0.32	-0.28	-0.23	-0.18	-0.13
7	*	-0.44	-0.40	-0.36	-0.33	-0.29	-0.26	-0.22	-0.17	-0.13
8	*	-0.39	-0.37	-0.32	-0.30	-0.27	-0.24	-0.21	-0.17	-0.14
9	*	-0.36	-0.33	-0.29	-0.27	-0.25	-0.23	-0.20	-0.17	-0.14
10	*	-0.32	-0.29	-0.26	-0.24	-0.22	-0.20	-0.18	-0.16	-0.13
11	*	-0.28	-0.26	-0.23	-0.21	-0.20	-0.19	-0.17	-0.15	-0.13
12	*	-0.19	-0.18	-0.16	-0.15	-0.14	-0.12	-0.11	-0.09	-0.06
13	*	-0.12	-0.12	-0.10	-0.10	-0.08	-0.07	-0.05	-0.03	0.00
14	*	-0.05	-0.04	-0.03	-0.02	-0.01	0.01	0.02	0.04	0.06
15	*	-0.61	-0.77	-0.94	-1.10	-1.27	-1.43	-1.60	-1.71	-1.89
16	*	-0.47	-0.61	-0.74	-0.80	-0.76	-0.65	-0.97	-1.10	-1.21
17	*	-0.23	-0.32	-0.40	-0.48	-0.56	-0.61	-0.73	-0.81	-0.91
18	*	-0.14	-0.20	-0.27	-0.33	-0.39	-0.46	-0.52	-0.59	-0.67
19	*	-0.15	-0.21	-0.26	-0.32	-0.37	-0.42	-0.48	-0.53	-0.60
20	*	-0.11	-0.16	-0.21	-0.25	-0.30	-0.35	-0.39	-0.44	-0.49
21	*	-0.12	-0.17	-0.21	-0.25	-0.29	-0.32	-0.36	-0.40	-0.45
22	*	-0.09	-0.13	-0.17	-0.20	-0.24	-0.27	-0.30	-0.34	-0.38
23	*	-0.08	-0.12	-0.15	-0.18	-0.21	-0.23	-0.26	-0.29	-0.33
24	*	-0.06	-0.08	-0.12	-0.15	-0.17	-0.20	-0.22	-0.25	-0.28
25	*	-0.06	-0.08	-0.10	-0.12	-0.13	-0.15	-0.16	-0.18	-0.21
26	*	-0.01	-0.04	-0.06	-0.09	-0.11	-0.13	-0.14	-0.17	-0.19
27	*	0.03	0.01	-0.01	-0.03	-0.05	-0.06	-0.08	-0.09	-0.12

KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

RUN NUMBER 6

FLAP DEFLECTION ANGLE = 5

4 MARCH 1981

R. HRABAK, D. LEVY

PRESSURE COEFFICIENT

-INTERPOLATED-

TUBE	*	ALPHA-ANGLE OF ATTACK (degrees)								
NUMBER	*	-8	-6	-4	-2	0	2	4	6	8

2	*	-1.54	-1.41	-1.29	-1.18	-1.05	-0.87	-0.73	-0.55	-0.42
3	*	-0.95	-0.88	-0.79	-0.72	-0.63	-0.51	-0.42	-0.30	-0.23
4	*	-0.73	-0.68	-0.60	-0.53	-0.47	-0.39	-0.32	-0.23	-0.17
5	*	-0.58	-0.53	-0.47	-0.42	-0.37	-0.31	-0.25	-0.18	-0.12
6	*	-0.46	-0.41	-0.36	-0.32	-0.28	-0.24	-0.19	-0.13	-0.08
7	*	-0.39	-0.35	-0.31	-0.28	-0.25	-0.21	-0.16	-0.11	-0.07
8	*	-0.34	-0.31	-0.28	-0.25	-0.22	-0.19	-0.15	-0.11	-0.08
9	*	-0.29	-0.27	-0.24	-0.22	-0.19	-0.17	-0.13	-0.10	-0.07
10	*	-0.24	-0.22	-0.19	-0.17	-0.15	-0.13	-0.11	-0.08	-0.05
11	*	-0.20	-0.18	-0.15	-0.14	-0.13	-0.11	-0.09	-0.07	-0.05
12	*	-0.03	-0.01	0.01	0.02	0.04	0.05	0.07	0.08	0.10
13	*	0.09	0.11	0.13	0.14	0.15	0.16	0.18	0.19	0.20
14	*	0.10	0.11	0.12	0.13	0.14	0.16	0.17	0.18	0.19
15	*	-0.68	-0.83	-0.99	-1.15	-1.32	-1.51	-1.68	-1.80	-2.02
16	*	-0.53	-0.67	-0.80	-0.89	-0.82	-0.90	-1.03	-1.17	-1.32
17	*	-0.28	-0.36	-0.44	-0.53	-0.61	-0.70	-0.79	-0.89	-1.00
18	*	-0.18	-0.25	-0.31	-0.38	-0.44	-0.51	-0.58	-0.67	-0.76
19	*	-0.22	-0.26	-0.32	-0.37	-0.43	-0.48	-0.54	-0.61	-0.69
20	*	-0.17	-0.22	-0.26	-0.31	-0.36	-0.44	-0.46	-0.52	-0.59
21	*	-0.20	-0.24	-0.28	-0.32	-0.36	-0.40	-0.44	-0.49	-0.55
22	*	-0.17	-0.20	-0.24	-0.28	-0.31	-0.35	-0.39	-0.43	-0.48
23	*	-0.17	-0.20	-0.23	-0.26	-0.29	-0.32	-0.36	-0.40	-0.44
24	*	-0.17	-0.19	-0.22	-0.24	-0.27	-0.30	-0.32	-0.37	-0.40
25	*	-0.20	-0.22	-0.23	-0.26	-0.27	-0.29	-0.31	-0.34	-0.37
26	*	-0.25	-0.28	-0.29	-0.31	-0.32	-0.34	-0.36	-0.38	-0.40
27	*	-0.11	-0.13	-0.14	-0.16	-0.17	-0.19	-0.21	-0.23	-0.25

KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

RUN NUMBER 8

FLAP DEFLECTION ANGLE = 15

6 MARCH 1981

R. HRABAK, P. FINN

PRESSURE COEFFICIENT

-INTERPOLATED-

TUBE	*	ALPHA-ANGLE OF ATTACK (degrees)								
NUMBER	*	-8	-6	-4	-2	0	2	4	6	8

	*									
2	*	-1.43	-1.27	-1.18	-1.07	-0.93	-0.75	-0.61	-0.44	-0.32
3	*	-0.86	-0.76	-0.70	-0.63	-0.53	-0.41	-0.32	-0.21	-0.15
4	*	-0.65	-0.57	-0.51	-0.44	-0.38	-0.30	-0.23	-0.14	-0.09
5	*	-0.49	-0.43	-0.38	-0.33	-0.28	-0.22	-0.16	-0.09	-0.04
	*									
6	*	-0.36	-0.31	-0.27	-0.23	-0.19	-0.14	-0.10	-0.04	0.00
7	*	-0.28	-0.24	-0.21	-0.17	-0.14	-0.10	-0.07	-0.02	0.02
8	*	-0.22	-0.19	-0.16	-0.13	-0.10	-0.07	-0.04	0.00	0.03
9	*	-0.16	-0.13	-0.11	-0.08	-0.06	-0.04	-0.01	0.03	0.04
10	*	-0.09	-0.07	-0.05	-0.03	-0.01	0.01	0.03	0.06	0.08
	*									
11	*	-0.03	-0.01	0.01	0.03	0.04	0.06	0.07	0.10	0.11
12	*	0.21	0.24	0.26	0.28	0.29	0.31	0.32	0.33	0.35
13	*	0.37	0.40	0.42	0.44	0.45	0.47	0.48	0.49	0.50
14	*	0.31	0.32	0.33	0.34	0.35	0.35	0.36	0.36	0.36
15	*	-0.80	-0.93	-1.10	-1.26	-1.45	-1.65	-1.82	-1.95	-2.20
	*									
16	*	-0.64	-0.77	-0.90	-0.98	-0.93	-1.02	-1.18	-1.29	-1.46
17	*	-0.38	-0.45	-0.53	-0.61	-0.71	-0.81	-0.92	-1.01	-1.14
18	*	-0.27	-0.33	-0.40	-0.46	-0.54	-0.62	-0.71	-0.78	-0.88
19	*	-0.31	-0.36	-0.41	-0.47	-0.53	-0.60	-0.68	-0.74	-0.82
20	*	-0.28	-0.32	-0.37	-0.42	-0.47	-0.53	-0.59	-0.65	-0.72
	*									
21	*	-0.31	-0.34	-0.39	-0.43	-0.47	-0.52	-0.58	-0.62	-0.69
22	*	-0.31	-0.33	-0.37	-0.40	-0.45	-0.49	-0.54	-0.58	-0.63
23	*	-0.33	-0.35	-0.38	-0.41	-0.45	-0.48	-0.52	-0.55	-0.60
24	*	-0.35	-0.37	-0.39	-0.41	-0.45	-0.48	-0.51	-0.54	-0.57
25	*	-0.49	-0.49	-0.50	-0.51	-0.53	-0.54	-0.56	-0.56	-0.58
	*									
26	*	-0.62	-0.61	-0.61	-0.61	-0.62	-0.62	-0.63	-0.62	-0.62
27	*	-0.38	-0.38	-0.39	-0.39	-0.41	-0.43	-0.45	-0.46	-0.48
	*									

KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

RUN NUMBER 9

FLAP DEFLECTION ANGLE = 20

6 MARCH 1981

R. HRABAK, P. FINN

PRESSURE COEFFICIENT

-INTERPOLATED-

TUBE	*	ALPHA-ANGLE OF ATTACK (degrees)								
NUMBER	*	-8	-6	-4	-2	0	2	4	6	8

	*									
2	*	-1.29	-1.21	-1.13	-1.03	-0.88	-0.69	-0.54	-0.39	-0.26
3	*	-0.75	-0.72	-0.65	-0.59	-0.49	-0.37	-0.26	-0.18	-0.11
4	*	-0.57	-0.52	-0.47	-0.40	-0.33	-0.25	-0.20	-0.11	-0.05
5	*	-0.42	-0.38	-0.34	-0.29	-0.23	-0.17	-0.12	-0.05	0.00
	*									
6	*	-0.30	-0.27	-0.23	-0.19	-0.14	-0.10	-0.05	0.00	0.04
7	*	-0.22	-0.19	-0.16	-0.13	-0.09	-0.05	-0.01	0.01	0.07
8	*	-0.15	-0.13	-0.11	-0.08	-0.05	-0.02	0.02	0.04	0.08
9	*	-0.09	-0.07	-0.05	-0.02	0.00	0.02	0.05	0.08	0.10
10	*	-0.02	-0.00	0.02	0.04	0.06	0.08	0.10	0.13	0.15
	*									
11	*	0.05	0.07	0.09	0.10	0.12	0.14	0.15	0.17	0.19
12	*	0.25	0.30	0.34	0.37	0.39	0.40	0.42	0.44	0.45
13	*	0.39	0.46	0.50	0.53	0.56	0.57	0.59	0.61	0.62
14	*	0.36	0.40	0.42	0.43	0.44	0.44	0.45	0.45	0.45
15	*	-0.81	-0.96	-1.12	-1.30	-1.50	-1.70	-1.84	-2.05	-2.24
	*									
16	*	-0.65	-0.80	-0.94	-1.03	-0.97	-1.06	-1.22	-1.36	-1.49
17	*	-0.39	-0.47	-0.55	-0.65	-0.74	-0.85	-0.96	-1.07	-1.17
18	*	-0.30	-0.36	-0.43	-0.50	-0.57	-0.66	-0.75	-0.84	-0.91
19	*	-0.33	-0.39	-0.44	-0.51	-0.57	-0.64	-0.71	-0.78	-0.85
20	*	-0.30	-0.35	-0.40	-0.45	-0.51	-0.57	-0.63	-0.69	-0.75
	*									
21	*	-0.34	-0.38	-0.42	-0.46	-0.51	-0.56	-0.62	-0.67	-0.71
22	*	-0.34	-0.37	-0.40	-0.44	-0.48	-0.53	-0.58	-0.62	-0.66
23	*	-0.36	-0.39	-0.41	-0.45	-0.48	-0.52	-0.56	-0.60	-0.63
24	*	-0.39	-0.41	-0.42	-0.45	-0.48	-0.51	-0.54	-0.57	-0.57
25	*	-0.53	-0.53	-0.54	-0.55	-0.55	-0.57	-0.57	-0.58	-0.59
	*									
26	*	-0.71	-0.69	-0.68	-0.68	-0.67	-0.66	-0.65	-0.65	-0.64
27	*	-0.52	-0.52	-0.52	-0.53	-0.54	-0.55	-0.57	-0.58	-0.59
	*									

6. DIFFERENTIAL PRESSURE COEFFICIENTS (BY RUN)

This chapter contains the difference between each lower surface tap and the corresponding upper surface tap. For example, tube 2 is the forwardmost tap location (tube 1 is the test section reference static port), and tube 15 is the opposing upper surface tap. Thus:

$$\Delta C_p|_{x/c=.119} = \text{Tube 2} - \text{Tube 15} \quad (6.1)$$

The tables are organized by each run number, or flap deflection.

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KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

RUN NUMBER 1

FLAP DEFLECTION ANGLE = -20

FILE NUMBER 11

CHANGE IN PRESSURE COEFFICIENT INTERPOLATED

TAP	*	ALPHA-ANGLE OF ATTACK (degrees)								
x/c	*	-8	-6	-4	-2	0	2	4	6	8

0.119	*	-1.68	-1.35	-1.02	-0.72	-0.37	0.01	0.35	0.65	0.80
0.171	*	-1.11	-0.87	-0.61	-0.41	-0.25	-0.11	0.11	0.22	0.46
0.223	*	-1.06	-0.89	-0.71	-0.54	-0.35	-0.17	-0.01	0.08	0.26
0.276	*	-0.98	-0.84	-0.70	-0.56	-0.41	-0.28	-0.14	-0.01	0.10
0.328	*	-0.84	-0.73	-0.60	-0.48	-0.36	-0.25	-0.13	-0.03	0.09
0.380	*	-0.81	-0.72	-0.62	-0.51	-0.41	-0.32	-0.21	-0.12	-0.00
0.433	*	-0.78	-0.71	-0.61	-0.53	-0.44	-0.43	-0.27	-0.21	-0.08
0.485	*	-0.80	-0.74	-0.66	-0.58	-0.50	-0.44	-0.36	-0.30	-0.17
0.537	*	-0.81	-0.76	-0.69	-0.63	-0.56	-0.51	-0.44	-0.39	-0.24
0.589	*	-0.84	-0.80	-0.75	-0.70	-0.64	-0.59	-0.53	-0.49	-0.34
0.668	*	-0.97	-0.94	-0.90	-0.86	-0.83	-0.79	-0.74	-0.70	-0.52
0.720	*	-1.05	-1.03	-0.99	-0.96	-0.94	-0.92	-0.88	-0.84	-0.66
0.766	*	-0.88	-0.87	-0.83	-0.81	-0.83	-0.81	-0.75	-0.74	-0.64

KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

RUN NUMBER 2

FLAP DEFLECTION ANGLE = -15

FILE NUMBER 12

CHANGE IN PRESSURE COEFFICIENT
INTERPOLATED

TAP	*	ALPHA-ANGLE OF ATTACK (degrees)								
x/c	*	-8	-6	-4	-2	0	2	4	6	8

0.119	*	-1.52	-1.15	-0.86	-0.55	-0.22	0.12	0.62	0.70	0.97
0.171	*	-0.98	-0.74	-0.49	-0.28	-0.18	0.13	0.18	0.40	0.58
0.223	*	-1.40	-0.78	-0.61	-0.42	-0.25	0.09	0.06	0.21	0.35
0.276	*	-1.13	-0.74	-0.60	-0.46	-0.32	-0.20	-0.07	0.01	0.16
0.328	*	-0.73	-0.63	-0.51	-0.38	-0.27	-0.17	-0.07	0.03	0.12
0.380	*	-0.72	-0.59	-0.53	-0.42	-0.32	-0.23	-0.15	-0.07	0.00
0.433	*	-0.68	-0.61	-0.53	-0.43	-0.34	-0.27	-0.21	-0.14	-0.08
0.485	*	-0.70	-0.64	-0.56	-0.48	-0.41	-0.35	-0.29	-0.23	-0.19
0.537	*	-0.70	-0.65	-0.59	-0.52	-0.46	-0.41	-0.36	-0.31	-0.27
0.589	*	-0.72	-0.69	-0.64	-0.58	-0.52	-0.48	-0.45	-0.41	-0.38
0.668	*	-0.83	-0.80	-0.77	-0.74	-0.71	-0.68	0.05	-0.63	-0.60
0.720	*	-0.90	-0.88	-0.87	-0.85	-0.83	-0.81	-0.78	-0.77	-0.74
0.766	*	-0.74	-0.72	-0.70	-0.69	-0.68	-0.67	-0.65	-0.63	-0.60

KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

RUN NUMBER 3

FLAP DEFLECTION ANGLE = -10

FILE NUMBER 13

CHANGE IN PRESSURE COEFFICIENT
INTERPOLATED

TAP		ALPHA-ANGLE OF ATTACK (degrees)								
x/c		-8	-6	-4	-2	0	2	4	6	8
0.119	*	-1.36	-1.03	-0.70	-0.36	-0.08	0.25	0.57	0.83	1.10
0.171	*	-0.86	-0.61	-0.34	-0.15	-0.09	0.07	0.28	0.50	0.68
0.223	*	-0.85	-0.68	-0.49	-0.32	-0.16	0.00	0.15	0.30	0.09
0.276	*	-0.77	-0.63	-0.49	-0.35	-0.23	-0.11	0.01	0.13	0.25
0.328	*	-0.64	-0.52	-0.39	-0.28	-0.18	-0.07	0.02	0.12	0.21
0.380	*	-0.62	-0.52	-0.41	-0.31	-0.22	-0.14	-0.06	0.02	0.11
0.433	*	-0.58	-0.50	-0.40	-0.31	-0.24	-0.17	-0.10	-0.04	0.03
0.485	*	-0.59	-0.52	-0.43	-0.36	-0.30	-0.23	-0.18	-0.12	-0.07
0.537	*	-0.58	-0.52	-0.45	-0.38	-0.33	-0.28	-0.24	-0.19	-0.14
0.589	*	-0.60	-0.54	-0.48	-0.43	-0.39	-0.34	-0.31	-0.27	-0.23
0.668	*	-0.66	-0.63	-0.60	-0.56	-0.54	-0.51	-0.49	-0.47	-0.44
0.720	*	-0.73	-0.70	-0.68	-0.65	-0.64	-0.61	-0.60	-0.58	-0.55
0.766	*	-0.54	-0.51	-0.48	-0.49	-0.44	-0.41	-0.39	-0.37	-0.34

KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

RUN NUMBER 4

FLAP DEFLECTION ANGLE = -5

FILE NUMBER 14

CHANGE IN PRESSURE COEFFICIENT INTERPOLATED

TAP	*	ALPHA-ANGLE OF ATTACK (degrees)								
x/c	*	-8	-6	-4	-2	0	2	4	6	8
0.119	*	-1.18	-0.85	-0.53	-0.26	0.07	0.41	0.70	0.95	1.27
0.171	*	-0.72	-0.46	-0.22	-0.07	0.01	0.19	0.38	0.60	0.81
0.223	*	-0.71	-0.54	-0.36	-0.21	-0.03	0.11	0.25	0.40	0.56
0.276	*	-0.64	-0.51	-0.37	-0.25	-0.11	-0.00	0.11	0.24	0.37
0.328	*	-0.50	-0.39	-0.27	-0.16	-0.05	0.04	0.13	0.23	0.34
0.380	*	-0.48	-0.38	-0.28	-0.19	-0.09	-0.02	0.06	0.15	0.23
0.433	*	-0.43	-0.35	-0.26	-0.18	-0.09	-0.04	0.02	0.09	0.17
0.485	*	-0.43	-0.36	-0.28	-0.22	-0.14	-0.09	-0.04	0.02	0.09
0.537	*	-0.41	-0.36	-0.29	-0.23	-0.17	-0.13	-0.08	-0.03	0.02
0.589	*	-0.42	-0.37	-0.31	-0.26	-0.20	-0.17	-0.14	-0.10	-0.05
0.668	*	-0.44	-0.41	-0.37	-0.33	-0.29	-0.28	-0.25	-0.22	-0.18
0.720	*	-0.49	-0.47	-0.43	-0.39	-0.36	-0.35	-0.32	-0.29	-0.25
0.766	*	-0.34	-0.31	-0.28	-0.25	-0.22	-0.20	-0.18	-0.15	-0.11

KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

RUN NUMBER 5

FLAP DEFLECTION ANGLE = 0

FILE NUMBER 15

CHANGE IN PRESSURE COEFFICIENT
INTERPOLATED

TAP		ALPHA-ANGLE OF ATTACK (degrees)								
x/c		-8	-6	-4	-2	0	2	4	6	8
0.119	*	-1.00	-0.71	-0.39	-0.12	0.18	0.50	0.82	1.08	1.41
0.171	*	-0.54	-0.32	-0.08	0.05	0.10	0.29	0.51	0.74	0.93
0.223	*	-0.56	-0.41	-0.24	-0.09	0.06	0.17	0.37	0.52	0.68
0.276	*	-0.50	-0.38	-0.25	-0.13	-0.02	0.10	0.22	0.36	0.49
0.328	*	-0.36	-0.25	-0.14	-0.05	0.05	0.14	0.24	0.35	0.47
0.380	*	-0.34	-0.25	-0.15	-0.07	0.01	0.09	0.18	0.27	0.37
0.433	*	-0.27	-0.20	-0.11	-0.05	0.02	0.08	0.15	0.23	0.31
0.485	*	-0.27	-0.20	-0.12	-0.07	-0.01	0.04	0.10	0.17	0.24
0.537	*	-0.24	-0.17	-0.11	-0.06	-0.02	0.03	0.08	0.13	0.20
0.589	*	-0.22	0.02	-0.11	-0.07	-0.03	0.01	0.05	0.09	0.15
0.668	*	-0.13	-0.10	-0.06	-0.03	-0.01	0.02	0.05	0.10	0.15
0.720	*	-0.12	-0.08	-0.04	-0.01	0.03	0.06	0.09	0.14	0.19
0.766	*	-0.08	-0.05	-0.02	0.01	0.04	0.07	0.10	0.13	0.18

KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

RUN NUMBER 6

FLAP DEFLECTION ANGLE = 5

FILE NUMBER 16

CHANGE IN PRESSURE COEFFICIENT INTERPOLATED

TAP	*	ALPHA-ANGLE OF ATTACK (degrees)								
x/c	*	-8	-6	-4	-2	0	2	4	6	8
0.119	*	-0.87	-0.58	-0.30	-0.03	0.27	0.63	0.95	1.25	1.60
0.171	*	-0.42	-0.20	0.01	0.18	0.19	0.39	0.62	0.87	1.09
0.223	*	-0.45	-0.31	-0.16	-0.01	0.14	0.31	0.47	0.66	0.82
0.276	*	-0.40	-0.28	-0.16	-0.04	0.07	0.20	0.33	0.48	0.64
0.328	*	-0.24	-0.15	-0.05	0.05	0.14	0.25	0.36	0.48	0.61
0.380	*	-0.22	-0.13	-0.05	0.03	0.11	0.24	0.30	0.41	0.52
0.433	*	-0.14	-0.07	0.00	0.07	0.14	0.21	0.29	0.38	0.47
0.485	*	-0.12	-0.06	0.00	0.06	0.12	0.18	0.25	0.33	0.42
0.537	*	-0.07	-0.02	0.04	0.09	0.14	0.19	0.25	0.32	0.39
0.589	*	-0.03	0.02	0.06	0.10	0.14	0.19	0.23	0.30	0.36
0.668	*	0.18	0.21	0.24	0.28	0.31	0.34	0.38	0.42	0.46
0.720	*	0.34	0.39	0.42	0.45	0.47	0.50	0.54	0.57	0.61
0.766	*	0.21	0.24	0.27	0.29	0.31	0.34	0.38	0.41	0.44

KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

RUN NUMBER 7

FLAP DEFLECTION ANGLE = 10

FILE NUMBER 17

CHANGE IN PRESSURE COEFFICIENT
INTERPOLATED

TAP	*	ALPHA-ANGLE OF ATTACK (degrees)								
x/c	*	-8	-6	-4	-2	0	2	4	6	8
0.119	*	-0.72	-0.45	-0.18	0.09	0.42	0.76	0.75	1.42	1.82
0.171	*	-0.29	-0.09	0.12	0.28	0.31	0.51	0.75	1.00	1.25
0.223	*	-0.35	-0.21	-0.06	0.09	0.25	0.42	0.59	0.78	0.98
0.276	*	-0.29	-0.18	-0.06	0.06	0.18	0.31	0.45	0.61	0.78
0.328	*	-0.14	-0.04	0.06	0.18	0.25	0.37	0.48	0.61	0.75
0.380	*	-0.10	-0.02	0.07	0.15	0.23	0.33	0.43	0.54	0.66
0.433	*	-0.01	0.05	0.12	0.19	0.27	0.34	0.43	0.52	0.62
0.485	*	0.02	0.08	0.14	0.20	0.27	0.34	0.41	0.50	0.58
0.537	*	0.09	0.15	0.20	0.25	0.30	0.36	0.43	0.50	0.57
0.589	*	0.16	0.21	0.25	0.29	0.33	0.39	0.44	0.50	0.56
0.668	*	0.47	0.51	0.54	0.58	0.61	0.66	0.68	0.72	0.76
0.720	*	0.72	0.75	0.79	0.81	0.83	0.88	0.89	0.91	0.93
0.766	*	0.46	0.49	0.52	0.54	0.56	0.58	0.65	0.64	0.67

KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

RUN NUMBER 8

FLAP DEFLECTION ANGLE = 15

FILE NUMBER 18

CHANGE IN PRESSURE COEFFICIENT INTERPOLATED

TAP	*	ALPHA-ANGLE OF ATTACK (degrees)								
x/c	*	-8	-6	-4	-2	0	2	4	6	8

0.119	*	-0.63	-0.34	-0.08	0.19	0.52	0.90	1.22	1.51	1.89
0.171	*	-0.22	0.01	0.20	0.36	0.39	0.60	0.86	1.08	1.31
0.223	*	-0.27	-0.12	0.02	0.17	0.34	0.51	0.69	0.87	1.05
0.276	*	-0.21	-0.09	0.02	0.13	0.26	0.40	0.54	0.69	0.84
0.328	*	-0.05	0.05	0.14	0.24	0.34	0.46	0.58	0.70	0.82
0.380	*	-0.00	0.08	0.16	0.24	0.33	0.43	0.53	0.63	0.75
0.433	*	0.09	0.16	0.23	0.29	0.37	0.45	0.54	0.62	0.71
0.485	*	0.15	0.20	0.26	0.32	0.39	0.46	0.53	0.60	0.68
0.537	*	0.24	0.28	0.33	0.38	0.44	0.50	0.55	0.62	0.68
0.589	*	0.32	0.36	0.40	0.44	0.49	0.53	0.59	0.63	0.68
0.668	*	0.70	0.73	0.76	0.79	0.82	0.85	0.88	0.89	0.93
0.720	*	0.98	1.01	1.03	1.05	1.07	1.09	1.11	1.10	1.13
0.766	*	0.68	0.70	0.72	0.74	0.76	0.78	0.80	0.82	0.84

KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

RUN NUMBER 9

FLAP DEFLECTION ANGLE = 20

FILE NUMBER 19

CHANGE IN PRESSURE COEFFICIENT
INTERPOLATED

TAP	*	ALPHA-ANGLE OF ATTACK (degrees)								
x/c	*	-8	-6	-4	-2	0	2	4	6	8

0.119	*	-0.47	-0.25	-0.01	0.27	0.63	1.00	1.31	1.66	1.97
0.171	*	-0.10	0.08	0.28	0.44	0.48	0.69	0.96	1.19	1.38
0.223	*	-0.17	-0.05	0.09	0.24	0.42	0.60	0.76	0.96	1.12
0.276	*	-0.12	-0.02	0.09	0.21	0.34	0.48	0.62	0.79	0.92
0.328	*	0.03	0.12	0.21	0.32	0.42	0.54	0.66	0.78	0.89
0.380	*	0.08	0.15	0.24	0.32	0.42	0.52	0.62	0.70	0.81
0.433	*	0.18	0.24	0.31	0.38	0.46	0.54	0.64	0.71	0.79
0.485	*	0.25	0.30	0.36	0.42	0.49	0.55	0.63	0.70	0.77
0.537	*	0.34	0.39	0.43	0.49	0.54	0.60	0.67	0.73	0.78
0.589	*	0.43	0.47	0.51	0.56	0.60	0.65	0.70	0.75	0.75
0.668	*	0.79	0.84	0.88	0.91	0.94	0.97	1.00	1.03	1.04
0.720	*	1.10	1.15	1.18	1.21	1.22	1.23	1.25	1.26	1.26
0.766	*	0.88	0.91	0.94	0.96	0.98	0.99	1.01	1.03	1.04

7. DIFFERENTIAL PRESSURE COEFFICIENT (BY TAPS)

This chapter contains the same values of Chapter 6, only tabulated by tap location.

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KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

TAP NUMBER 1

FILE NUMBER 20

TAP x/c LOCATION 0.119

CHANGE IN PRESSURE COEFFICIENT INTERPOLATED

FLAP DEFLECTION*	*	ALPHA-ANGLE OF ATTACK (degrees)								
		-8	-6	-4	-2	0	2	4	6	8
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
-20.0	*	-1.68	-1.35	-1.02	-0.72	-0.37	0.01	0.35	0.65	0.80
-15.0	*	-1.52	-1.15	-0.86	-0.55	-0.22	0.12	0.62	0.70	0.97
-10.0	*	-1.36	-1.03	-0.70	-0.36	-0.08	0.25	0.57	0.83	1.10
-5.0	*	-1.18	-0.85	-0.53	-0.26	0.07	0.41	0.70	0.95	1.27
0.0	*	-1.00	-0.71	-0.39	-0.12	0.18	0.50	0.82	1.08	1.41
5.0	*	-0.87	-0.58	-0.30	-0.03	0.27	0.63	0.95	1.25	1.60
10.0	*	-0.72	-0.45	-0.18	0.09	0.42	0.76	0.75	1.42	1.82
15.0	*	-0.63	-0.34	-0.08	0.19	0.52	0.90	1.22	1.51	1.89
20.0	*	-0.47	-0.25	-0.01	0.27	0.63	1.00	1.31	1.66	1.97
	*									
	*									

KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

TAP NUMBER 2

FILE NUMBER 21

TAP x/c LOCATION 0.171

CHANGE IN PRESSURE COEFFICIENT INTERPOLATED

FLAP DEFLECTION*	* -8	* -6	* -4	* -2	* 0	* 2	* 4	* 6	* 8
ALPHA-ANGLE OF ATTACK (degrees)									
-20.0	-1.11	-0.87	-0.61	-0.41	-0.25	-0.11	0.11	0.22	0.46
-15.0	-0.98	-0.74	-0.49	-0.28	-0.18	0.13	0.18	0.40	0.58
-10.0	-0.86	-0.61	-0.34	-0.15	-0.09	0.07	0.28	0.50	0.68
-5.0	-0.72	-0.46	-0.22	-0.07	0.01	0.19	0.38	0.60	0.81
0.0	-0.54	-0.32	-0.08	0.05	0.10	0.29	0.51	0.74	0.93
5.0	-0.42	-0.20	0.01	0.18	0.19	0.39	0.62	0.87	1.09
10.0	-0.29	-0.09	0.12	0.28	0.31	0.51	0.75	1.00	1.25
15.0	-0.22	0.01	0.20	0.36	0.39	0.60	0.86	1.08	1.31
20.0	-0.10	0.08	0.28	0.44	0.48	0.69	0.96	1.19	1.38

KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

TAP NUMBER 3

FILE NUMBER 22

TAP x/c LOCATION 0.223

CHANGE IN IPRESSURE COEFFICIENT INTERPOLATED

FLAP DEFLECTION*	* -8	* -6	* -4	* -2	* 0	* 2	* 4	* 6	* 8
ALPHA-ANGLE OF ATTACK (degrees)									
-20.0	* -1.06	* -0.89	* -0.71	* -0.54	* -0.35	* -0.17	* -0.01	* 0.08	* 0.26
-15.0	* -1.40	* -0.78	* -0.61	* -0.42	* -0.25	* 0.09	* 0.06	* 0.21	* 0.35
-10.0	* -0.85	* -0.68	* -0.49	* -0.32	* -0.16	* 0.00	* 0.15	* 0.30	* 0.09
-5.0	* -0.71	* -0.54	* -0.38	* -0.21	* -0.03	* 0.11	* 0.25	* 0.40	* 0.56
0.0	* -0.56	* -0.41	* -0.24	* -0.09	* 0.06	* 0.17	* 0.37	* 0.52	* 0.68
5.0	* -0.45	* -0.31	* -0.16	* -0.01	* 0.14	* 0.31	* 0.47	* 0.66	* 0.82
10.0	* -0.35	* -0.21	* -0.06	* 0.09	* 0.25	* 0.42	* 0.59	* 0.78	* 0.98
15.0	* -0.27	* -0.12	* 0.02	* 0.17	* 0.34	* 0.51	* 0.69	* 0.87	* 1.05
20.0	* -0.17	* -0.05	* 0.09	* 0.24	* 0.42	* 0.60	* 0.76	* 0.96	* 1.12

KANSAS UNIVERSITY FLIGHT RESEARCH LAB

DELTA P PROJECT - PHASE I

TAP NUMBER 4

FILE NUMBER 23

TAP x/c LOCATION 0.276

CHANGE IN PRESSURE COEFFICIENT INTERPOLATED

FLAP DEFLECTION*	* -8	* -6	* -4	* -2	* 0	* 2	* 4	* 6	* 8
ALPHA-ANGLE OF ATTACK (degrees)									
-20.0	* -0.98	* -0.84	* -0.70	* -0.56	* -0.41	* -0.28	* -0.14	* -0.01	* 0.10
-15.0	* -1.13	* -0.74	* -0.60	* -0.46	* -0.32	* -0.20	* -0.07	* 0.01	* 0.16
-10.0	* -0.77	* -0.63	* -0.49	* -0.35	* -0.23	* -0.11	* 0.01	* 0.13	* 0.25
-5.0	* -0.64	* -0.51	* -0.37	* -0.25	* -0.11	* -0.00	* 0.11	* 0.24	* 0.37
0.0	* -0.50	* -0.38	* -0.25	* -0.13	* -0.02	* 0.10	* 0.22	* 0.36	* 0.49
5.0	* -0.40	* -0.28	* -0.16	* -0.04	* 0.07	* 0.20	* 0.33	* 0.48	* 0.64
10.0	* -0.29	* -0.18	* -0.06	* 0.06	* 0.18	* 0.31	* 0.45	* 0.61	* 0.78
15.0	* -0.21	* -0.09	* 0.02	* 0.13	* 0.26	* 0.40	* 0.54	* 0.69	* 0.84
20.0	* -0.12	* -0.02	* 0.09	* 0.21	* 0.34	* 0.48	* 0.62	* 0.79	* 0.92

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DELTA P PROJECT - PHASE I

TAP NUMBER 5

FILE NUMBER 24

TAP x/c LOCATION 0.328

CHANGE IN PRESSURE COEFFICIENT INTERPOLATED

FLAP DEFLECTION*	ALPHA-ANGLE OF ATTACK (degrees)								
	-8	-6	-4	-2	0	2	4	6	8
-20.0 *	-0.84	-0.73	-0.60	-0.48	-0.36	-0.25	-0.13	-0.03	0.09
-15.0 *	-0.73	-0.63	-0.51	-0.38	-0.27	-0.17	-0.07	0.03	0.12
-10.0 *	-0.64	-0.52	-0.39	-0.28	-0.18	-0.07	0.02	0.12	0.21
-5.0 *	-0.50	-0.39	-0.27	-0.16	-0.05	0.04	0.13	0.23	0.34
0.0 *	-0.36	-0.25	-0.14	-0.05	0.05	0.14	0.24	0.35	0.47
5.0 *	-0.24	-0.15	-0.05	0.05	0.14	0.25	0.36	0.48	0.61
10.0 *	-0.14	-0.04	0.06	0.18	0.25	0.37	0.48	0.61	0.75
15.0 *	-0.05	0.05	0.14	0.24	0.34	0.46	0.58	0.70	0.82
20.0 *	0.03	0.12	0.21	0.32	0.42	0.54	0.66	0.78	0.89

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DELTA P PROJECT - PHASE I

TAP NUMBER 6

FILE NUMBER 25

TAP x/c LOCATION 0.380

CHANGE IN PRESSURE COEFFICIENT INTERPOLATED

FLAP		ALPHA-ANGLE OF ATTACK (degrees)								
DEFLECTION*		-8	-6	-4	-2	0	2	4	6	8
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
-20.0	*	-0.81	-0.72	-0.62	-0.51	-0.41	-0.32	-0.21	-0.12	-0.00
-15.0	*	-0.72	-0.59	-0.53	-0.42	-0.32	-0.23	-0.15	-0.07	0.00
-10.0	*	-0.62	-0.52	-0.41	-0.31	-0.22	-0.14	-0.06	0.02	0.11
-5.0	*	-0.48	-0.38	-0.28	-0.19	-0.09	-0.02	0.06	0.15	0.23
0.0	*	-0.34	-0.25	-0.15	-0.07	0.01	0.09	0.18	0.27	0.37
5.0	*	-0.22	-0.13	-0.05	0.03	0.11	0.24	0.30	0.41	0.52
10.0	*	-0.10	-0.02	0.07	0.15	0.23	0.33	0.43	0.54	0.66
15.0	*	-0.00	0.08	0.16	0.24	0.33	0.43	0.53	0.63	0.75
20.0	*	0.08	0.15	0.24	0.32	0.42	0.52	0.62	0.70	0.81
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****

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DELTA P PROJECT - PHASE I

TAP NUMBER 7

FILE NUMBER 26

TAP x/c LOCATION 0.433

CHANGE IN PRESSURE COEFFICIENT INTERPOLATED

FLAP DEFLECTION*	* -8	* -6	* -4	* -2	* 0	* 2	* 4	* 6	* 8
ALPHA-ANGLE OF ATTACK (degrees)									
-20.0	* -0.78	* -0.71	* -0.61	* -0.53	* -0.44	* -0.43	* -0.27	* -0.21	* -0.08
-15.0	* -0.68	* -0.61	* -0.53	* -0.43	* -0.34	* -0.27	* -0.21	* -0.14	* -0.08
-10.0	* -0.58	* -0.50	* -0.40	* -0.31	* -0.24	* -0.17	* -0.10	* -0.04	* 0.03
-5.0	* -0.43	* -0.35	* -0.26	* -0.18	* -0.09	* -0.04	* 0.02	* 0.09	* 0.17
0.0	* -0.27	* -0.20	* -0.11	* -0.05	* 0.02	* 0.08	* 0.15	* 0.23	* 0.31
5.0	* -0.14	* -0.07	* 0.00	* 0.07	* 0.14	* 0.21	* 0.29	* 0.38	* 0.47
10.0	* -0.01	* 0.05	* 0.12	* 0.19	* 0.27	* 0.34	* 0.43	* 0.52	* 0.62
15.0	* 0.09	* 0.16	* 0.23	* 0.29	* 0.37	* 0.45	* 0.54	* 0.62	* 0.71
20.0	* 0.18	* 0.24	* 0.31	* 0.38	* 0.46	* 0.54	* 0.64	* 0.71	* 0.79

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DELTA P PROJECT - PHASE I

TAP NUMBER 8

FILE NUMBER 27

TAP x/c LOCATION 0.485

CHANGE IN PRESSURE COEFFICIENT INTERPOLATED

FLAP DEFLECTION*	* -8	* -6	* -4	* -2	* 0	* 2	* 4	* 6	* 8
ALPHA-ANGLE OF ATTACK (degrees)									
-20.0	* -0.80	* -0.74	* -0.66	* -0.58	* -0.50	* -0.44	* -0.36	* -0.30	* -0.17
-15.0	* -0.70	* -0.64	* -0.56	* -0.48	* -0.41	* -0.35	* -0.29	* -0.23	* -0.19
-10.0	* -0.59	* -0.52	* -0.43	* -0.36	* -0.30	* -0.23	* -0.18	* -0.12	* -0.07
-5.0	* -0.43	* -0.36	* -0.28	* -0.22	* -0.14	* -0.09	* -0.04	* 0.02	* 0.09
0.0	* -0.27	* -0.20	* -0.12	* -0.07	* -0.01	* 0.04	* 0.10	* 0.17	* 0.24
5.0	* -0.12	* -0.06	* 0.00	* 0.06	* 0.12	* 0.18	* 0.25	* 0.33	* 0.42
10.0	* 0.02	* 0.08	* 0.14	* 0.20	* 0.27	* 0.34	* 0.41	* 0.50	* 0.58
15.0	* 0.15	* 0.20	* 0.26	* 0.32	* 0.39	* 0.46	* 0.53	* 0.60	* 0.68
20.0	* 0.25	* 0.30	* 0.36	* 0.42	* 0.49	* 0.55	* 0.63	* 0.70	* 0.77

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DELTA P PROJECT - PHASE I

TAP NUMBER 9

FILE NUMBER 28

TAP x/c LOCATION 0.537

CHANGE IN PRESSURE COEFFICIENT INTERPOLATED

FLAP	*	ALPHA-ANGLE OF ATTACK (degrees)								
DEFLECTION*		-8	-6	-4	-2	0	2	4	6	8

-20.0	*	-0.81	-0.76	-0.69	-0.63	-0.56	-0.51	-0.44	-0.39	-0.24
	*									
-15.0	*	-0.70	-0.65	-0.59	-0.52	-0.46	-0.41	-0.36	-0.31	-0.27
	*									
-10.0	*	-0.58	-0.52	-0.45	-0.38	-0.33	-0.28	-0.24	-0.19	-0.14
	*									
-5.0	*	-0.41	-0.36	-0.29	-0.23	-0.17	-0.13	-0.08	-0.03	0.02
	*									
0.0	*	-0.24	-0.17	-0.11	-0.06	-0.02	0.03	0.08	0.13	0.20
	*									
5.0	*	-0.07	-0.02	0.04	0.09	0.14	0.19	0.25	0.32	0.39
	*									
10.0	*	0.09	0.15	0.20	0.25	0.30	0.36	0.43	0.50	0.57
	*									
15.0	*	0.24	0.28	0.33	0.38	0.44	0.50	0.55	0.62	0.68
	*									
20.0	*	0.34	0.39	0.43	0.49	0.54	0.60	0.67	0.73	0.78
	*									
	*									

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DELTA P PROJECT - PHASE I

TAP NUMBER 10

FILE NUMBER 29

TAP x/c LOCATION 0.589

CHANGE IN PRESSURE COEFFICIENT INTERPOLATED

FLAP	ALPHA-ANGLE OF ATTACK (degrees)									
DEFLECTION*	-8	-6	-4	-2	0	2	4	6	8	

-20.0	* -0.84	* -0.80	* -0.75	* -0.70	* -0.64	* -0.59	* -0.53	* -0.49	* -0.34	
-15.0	* -0.72	* -0.69	* -0.64	* -0.58	* -0.52	* -0.48	* -0.45	* -0.41	* -0.38	
-10.0	* -0.60	* -0.54	* -0.48	* -0.43	* -0.39	* -0.34	* -0.31	* -0.27	* -0.23	
-5.0	* -0.42	* -0.37	* -0.31	* -0.26	* -0.20	* -0.17	* -0.14	* -0.10	* -0.05	
0.0	* -0.22	* 0.02	* -0.11	* -0.07	* -0.03	* 0.01	* 0.05	* 0.09	* 0.15	
5.0	* -0.03	* 0.02	* 0.06	* 0.10	* 0.14	* 0.19	* 0.23	* 0.30	* 0.36	
10.0	* 0.16	* 0.21	* 0.25	* 0.29	* 0.33	* 0.39	* 0.44	* 0.50	* 0.56	
15.0	* 0.32	* 0.36	* 0.40	* 0.44	* 0.49	* 0.53	* 0.59	* 0.63	* 0.68	
20.0	* 0.43	* 0.47	* 0.51	* 0.56	* 0.60	* 0.65	* 0.70	* 0.75	* 0.75	

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DELTA P PROJECT - PHASE I

TAP NUMBER 11

FILE NUMBER 30

TAP x/c LOCATION 0.668

CHANGE IN PRESSURE COEFFICIENT INTERPOLATED

FLAP DEFLECTION*	* -8	* -6	* -4	* -2	* 0	* 2	* 4	* 6	* 8
ALPHA-ANGLE OF ATTACK (degrees)									
-20.0	* -0.97	* -0.94	* -0.90	* -0.86	* -0.83	* -0.79	* -0.74	* -0.70	* -0.52
-15.0	* -0.83	* -0.80	* -0.77	* -0.74	* -0.71	* -0.68	* 0.05	* -0.63	* -0.60
-10.0	* -0.66	* -0.63	* -0.60	* -0.56	* -0.54	* -0.51	* -0.49	* -0.47	* -0.44
-5.0	* -0.44	* -0.41	* -0.37	* -0.33	* -0.29	* -0.28	* -0.25	* -0.22	* -0.18
0.0	* -0.13	* -0.10	* -0.06	* -0.03	* -0.01	* 0.02	* 0.05	* 0.10	* 0.15
5.0	* 0.18	* 0.21	* 0.24	* 0.28	* 0.31	* 0.34	* 0.38	* 0.42	* 0.46
10.0	* 0.47	* 0.51	* 0.54	* 0.58	* 0.61	* 0.66	* 0.68	* 0.72	* 0.76
15.0	* 0.70	* 0.73	* 0.76	* 0.79	* 0.82	* 0.85	* 0.88	* 0.89	* 0.93
20.0	* 0.79	* 0.84	* 0.88	* 0.91	* 0.94	* 0.97	* 1.00	* 1.03	* 1.04

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DELTA P PROJECT - PHASE I

TAP NUMBER 12

FILE NUMBER 31

TAP x/c LOCATION 0.720

CHANGE IN PRESSURE COEFFICIENT INTERPOLATED

FLAP DEFLECTION*	*	ALPHA-ANGLE OF ATTACK (degrees)								
	*	-8	-6	-4	-2	0	2	4	6	8
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
-20.0	*	-1.05	-1.03	-0.99	-0.96	-0.94	-0.92	-0.88	-0.84	-0.66
-15.0	*	-0.90	-0.88	-0.87	-0.85	-0.83	-0.81	-0.78	-0.77	-0.74
-10.0	*	-0.73	-0.70	-0.68	-0.65	-0.64	-0.61	-0.60	-0.58	-0.55
-5.0	*	-0.49	-0.47	-0.43	-0.39	-0.36	-0.35	-0.32	-0.29	-0.25
0.0	*	-0.12	-0.08	-0.04	-0.01	0.03	0.06	0.09	0.14	0.19
5.0	*	0.34	0.39	0.42	0.45	0.47	0.50	0.54	0.57	0.61
10.0	*	0.72	0.75	0.79	0.81	0.83	0.88	0.89	0.91	0.93
15.0	*	0.98	1.01	1.03	1.05	1.07	1.09	1.11	1.10	1.13
20.0	*	1.10	1.15	1.18	1.21	1.22	1.23	1.25	1.26	1.26
	*									
	*									
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****

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DELTA P PROJECT - PHASE I

TAP NUMBER 13

FILE NUMBER 32

TAP x/c LOCATION 0.766

CHANGE IN PRESSURE COEFFICIENT INTERPOLATED

FLAP	ALPHA-ANGLE OF ATTACK (degrees)								
DEFLECTION*	-8	-6	-4	-2	0	2	4	6	8

-20.0	* -0.88	* -0.87	* -0.83	* -0.81	* -0.83	* -0.81	* -0.75	* -0.74	* -0.64
-15.0	* -0.74	* -0.72	* -0.70	* -0.69	* -0.68	* -0.67	* -0.65	* -0.63	* -0.60
-10.0	* -0.54	* -0.51	* -0.48	* -0.49	* -0.44	* -0.41	* -0.39	* -0.37	* -0.34
-5.0	* -0.34	* -0.31	* -0.28	* -0.25	* -0.22	* -0.20	* -0.18	* -0.15	* -0.11
0.0	* -0.08	* -0.05	* -0.02	* 0.01	* 0.04	* 0.07	* 0.10	* 0.13	* 0.18
5.0	* 0.21	* 0.24	* 0.27	* 0.29	* 0.31	* 0.34	* 0.38	* 0.41	* 0.44
10.0	* 0.46	* 0.49	* 0.52	* 0.54	* 0.56	* 0.58	* 0.65	* 0.64	* 0.67
15.0	* 0.68	* 0.70	* 0.72	* 0.74	* 0.76	* 0.78	* 0.80	* 0.82	* 0.84
20.0	* 0.88	* 0.91	* 0.94	* 0.96	* 0.98	* 0.99	* 1.01	* 1.03	* 1.04

8. GRAPHICAL PRESENTATION--FLAP DEFLECTION SENSITIVITY

This chapter visualizes the tabulated data of Chapter 7. The steepness of the slopes represents the sensitivity of pressure differential to flap deflection. The spread of the angle of attack lines represent sensitivity to angle of attack.

NOTE: LOWER SURFACE C_p INTERPOLATED TO UPPER SURFACE TAP LOCATION

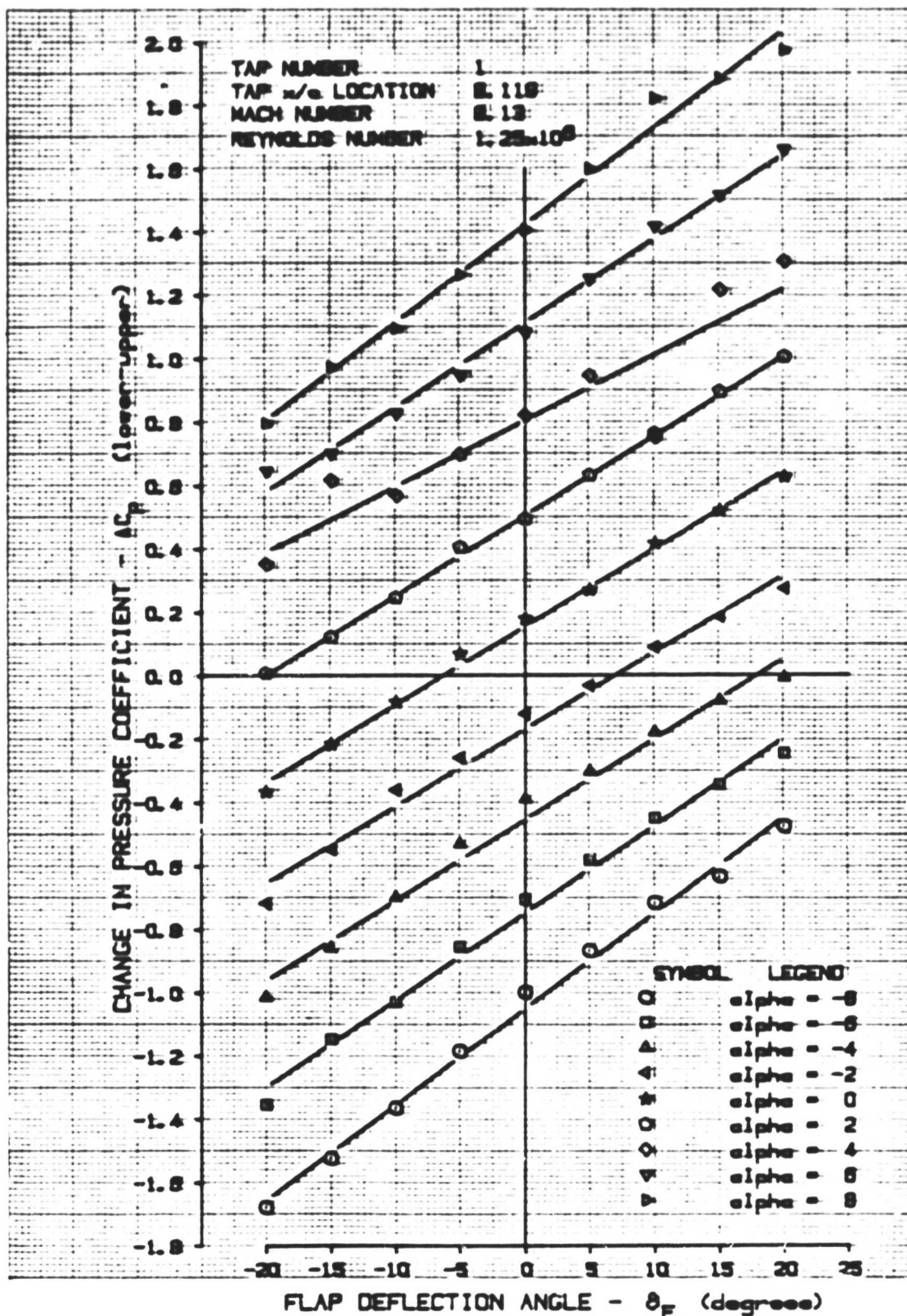


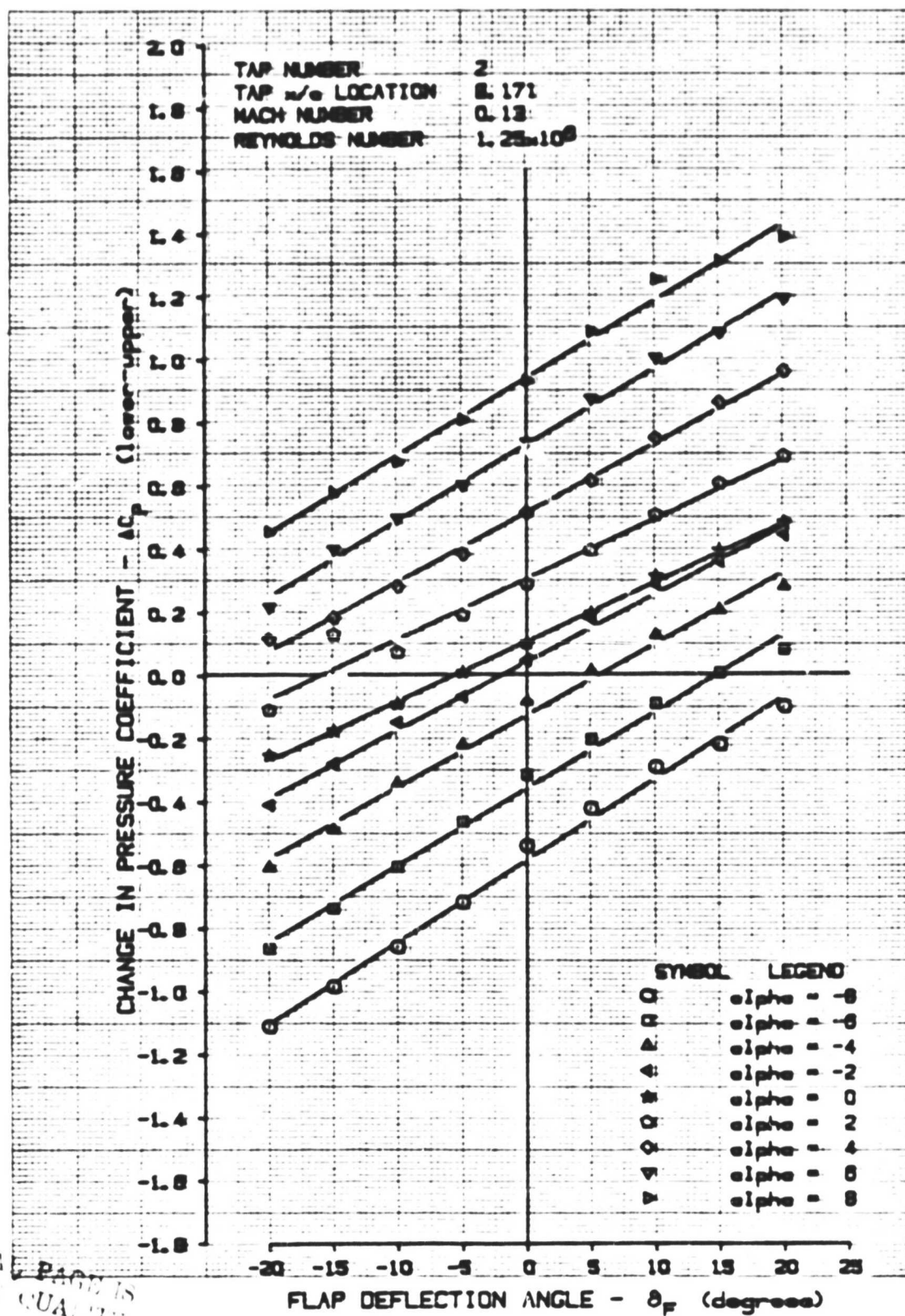
FIGURE 8.1 EXPERIMENTAL CHANGE IN PRESSURE COEFFICIENTS - FLAP DEFLECTION SENSITIVITY

CALC	P. FINN	5-81	REVISED	DATE
CHECK	D. LEVY	5/25/6		
APPO				
APPO				

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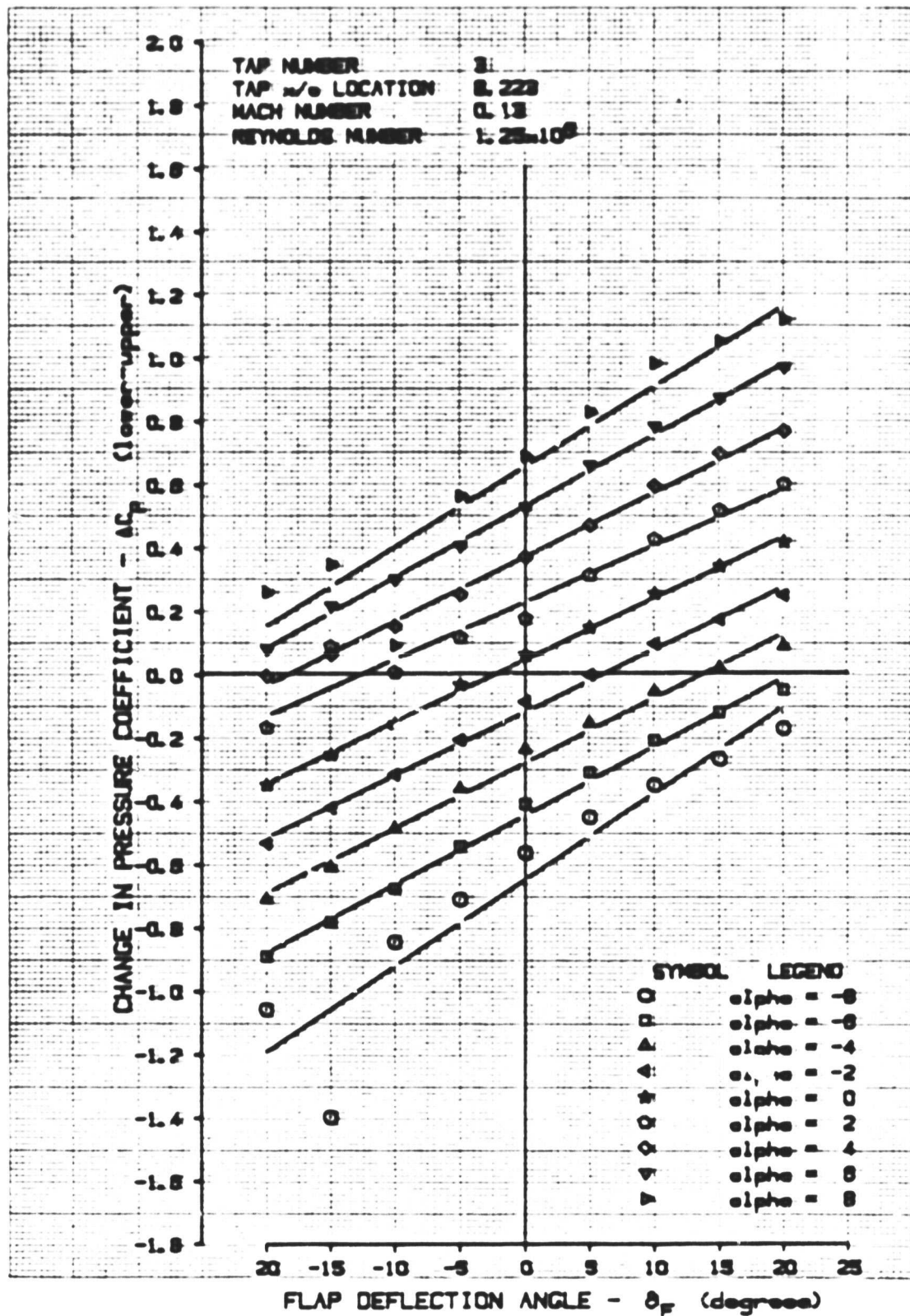
NOTE: LOWER SURFACE C_p INTERPOLATED TO UPPER SURFACE TAP LOCATION



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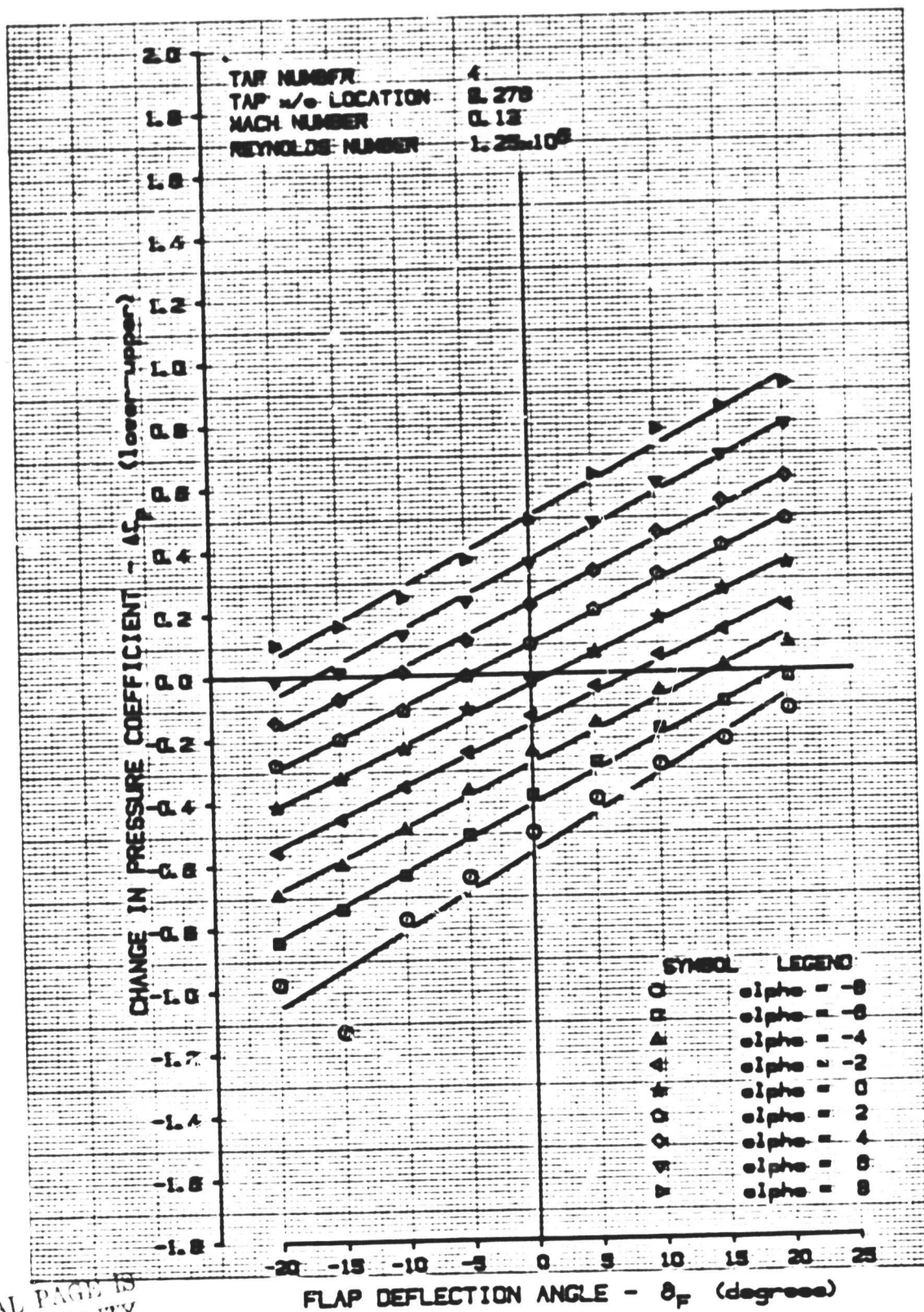
CALC	P. FINN	5-81	REVISED	DATE	FIGURE 8.2 EXPERIMENTAL CHANGE IN PRESSURE COEFFICIENTS - FLAP DEFLECTION SENSITIVITY	DATE 20-5-81
CHECK	D. LEVY	5/25/81				
APPO						
APPO						
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NOTE: LOWER SURFACE C_p INTERPOLATED TO UPPER SURFACE TAP LOCATION



CALC	P. FINN	5-81	REVISED	DATE	FIGURE 8.3 EXPERIMENTAL CHANGE IN PRESSURE COEFFICIENTS - FLAP DEFLECTION SENSITIVITY	DATE 20-5-81
CHECK	D. LEVY	5/25/81				
APPO						
APPO						
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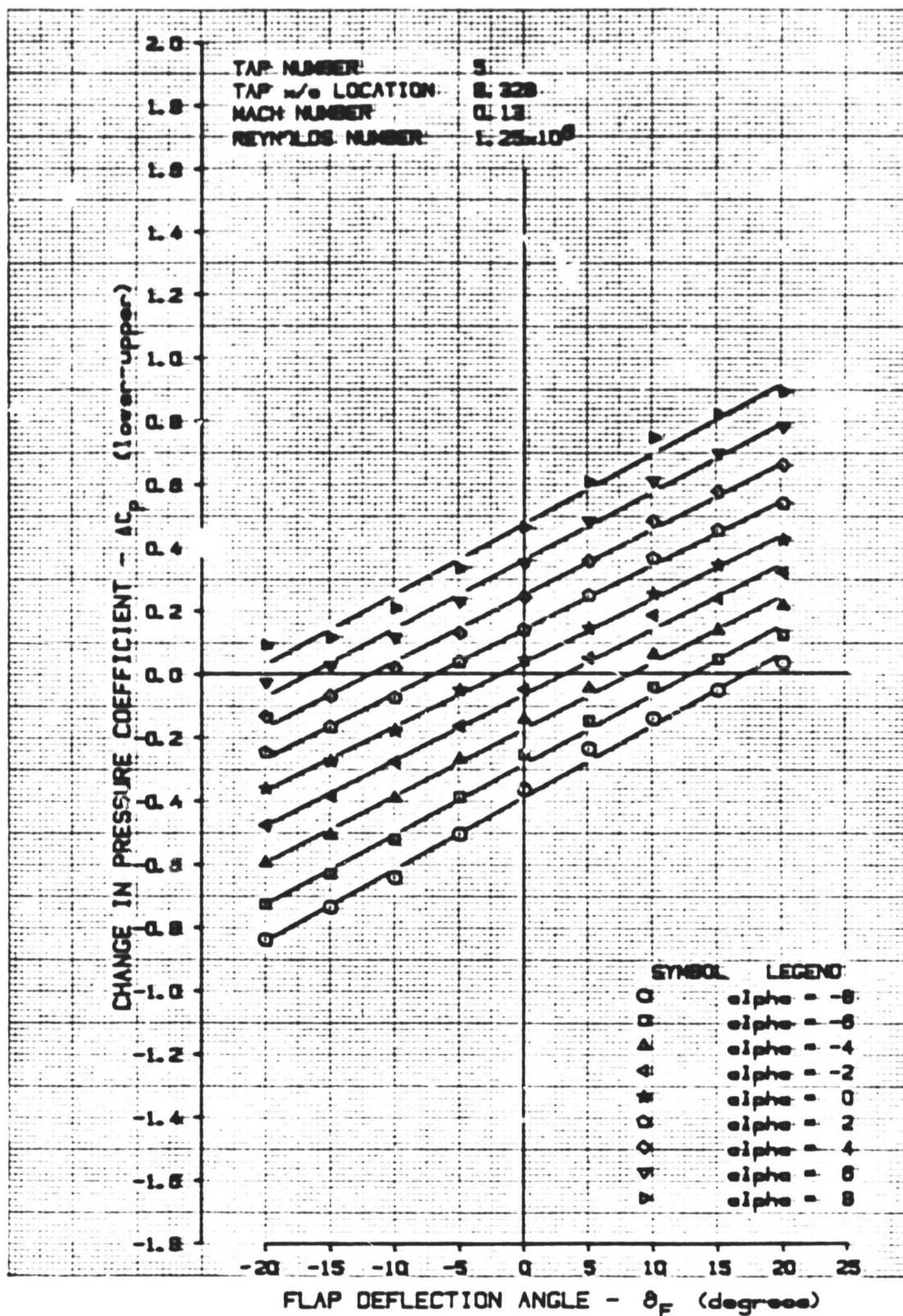
NOTE: LOWER SURFACE C_p INTERPOLATED TO UPPER SURFACE TAP LOCATION



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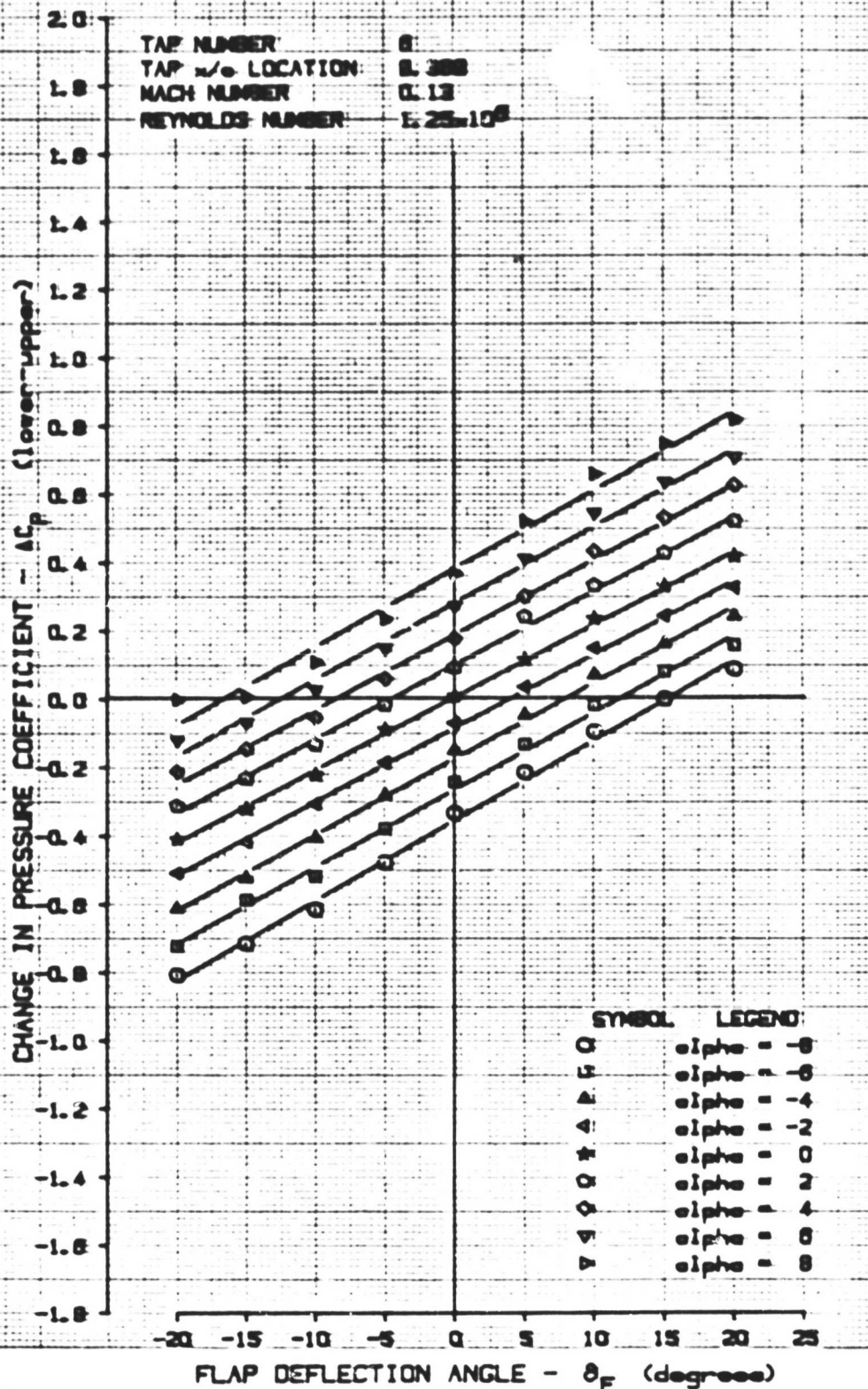
CALC	P. FINN	5-81	REVISED	DATE	FIGURE 8.4 EXPERIMENTAL CHANGE IN PRESSURE COEFFICIENTS - FLAP DEFLECTION SENSITIVITY	DATE 20-5-81
CHECK	D. LEVY	5/25/84				
APPO						
APPO						
					UNIVERSITY OF KANSAS	PAGE 73

NOTE: LOWER SURFACE C_p INTERPOLATED TO UPPER SURFACE TAP LOCATION



CALC	P. FINN	5-81	REVISED	DATE	FIGURE 8.5 EXPERIMENTAL CHANGE IN PRESSURE COEFFICIENTS - FLAP DEFLECTION SENSITIVITY	DATE 20-5-81
CHECK	D. LEVY	5/25/81				
APPO						
APPO						
					UNIVERSITY OF KANSAS	PAGE 74

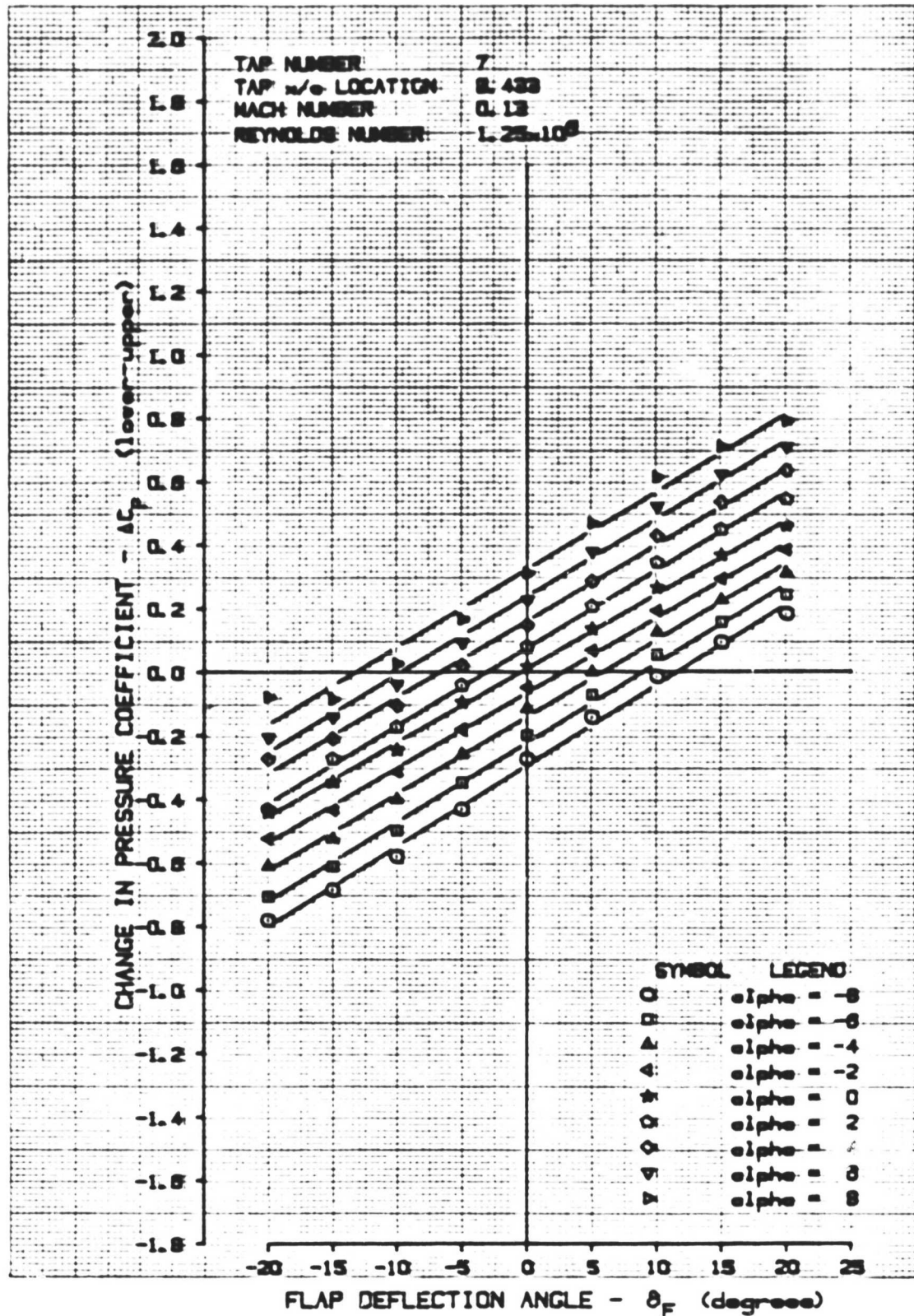
NOTE: LOVER SURFACE C_p INTERPOLATED TO UPPER SURFACE TAP LOCATION



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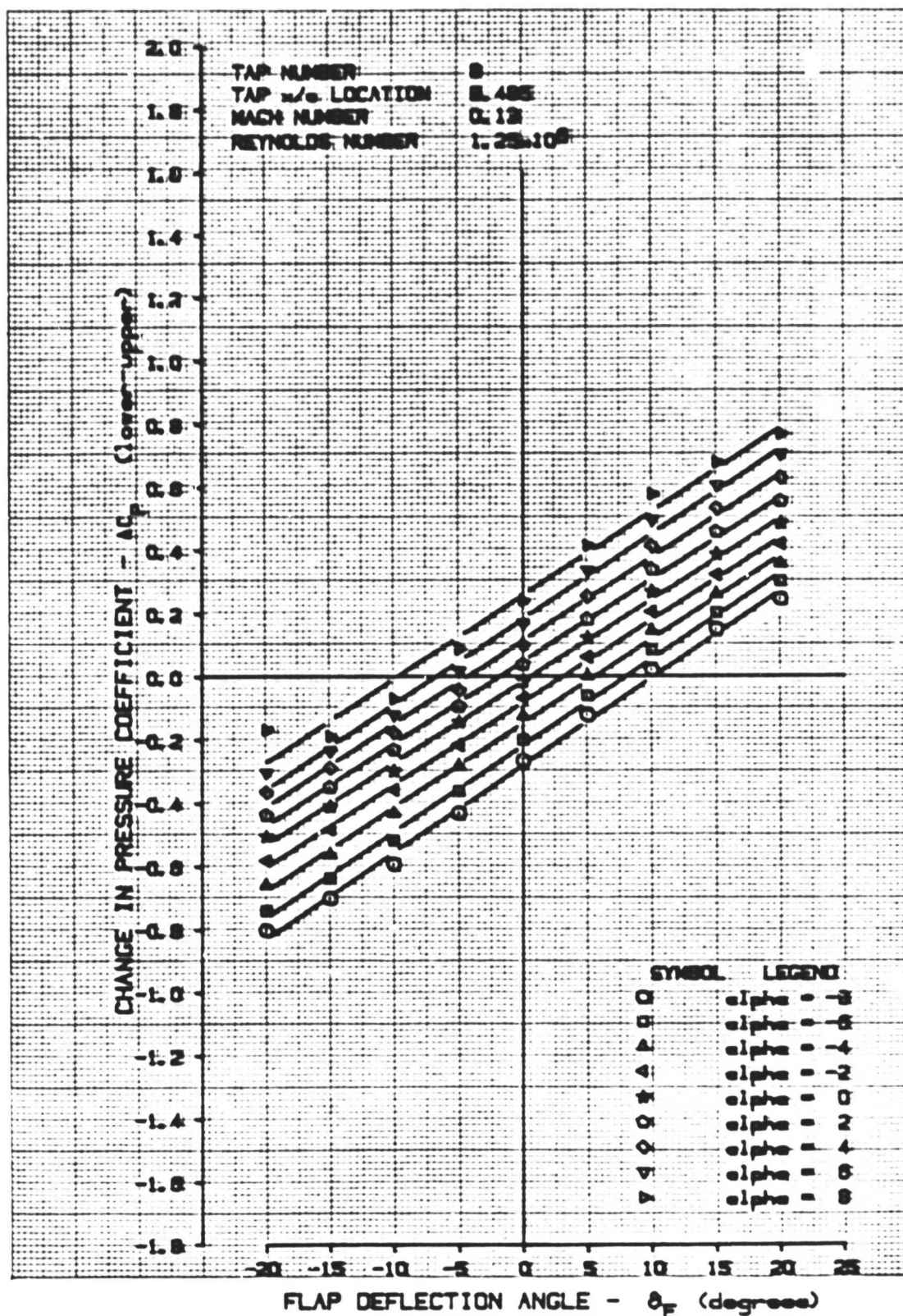
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CHECK	D. LEVY	5/25/81				
APPO						
APPO						
UNIVERSITY OF KANSAS						PAGE 75

NOTE: LOWER SURFACE C_p INTERPOLATED TO UPPER SURFACE TAP LOCATION



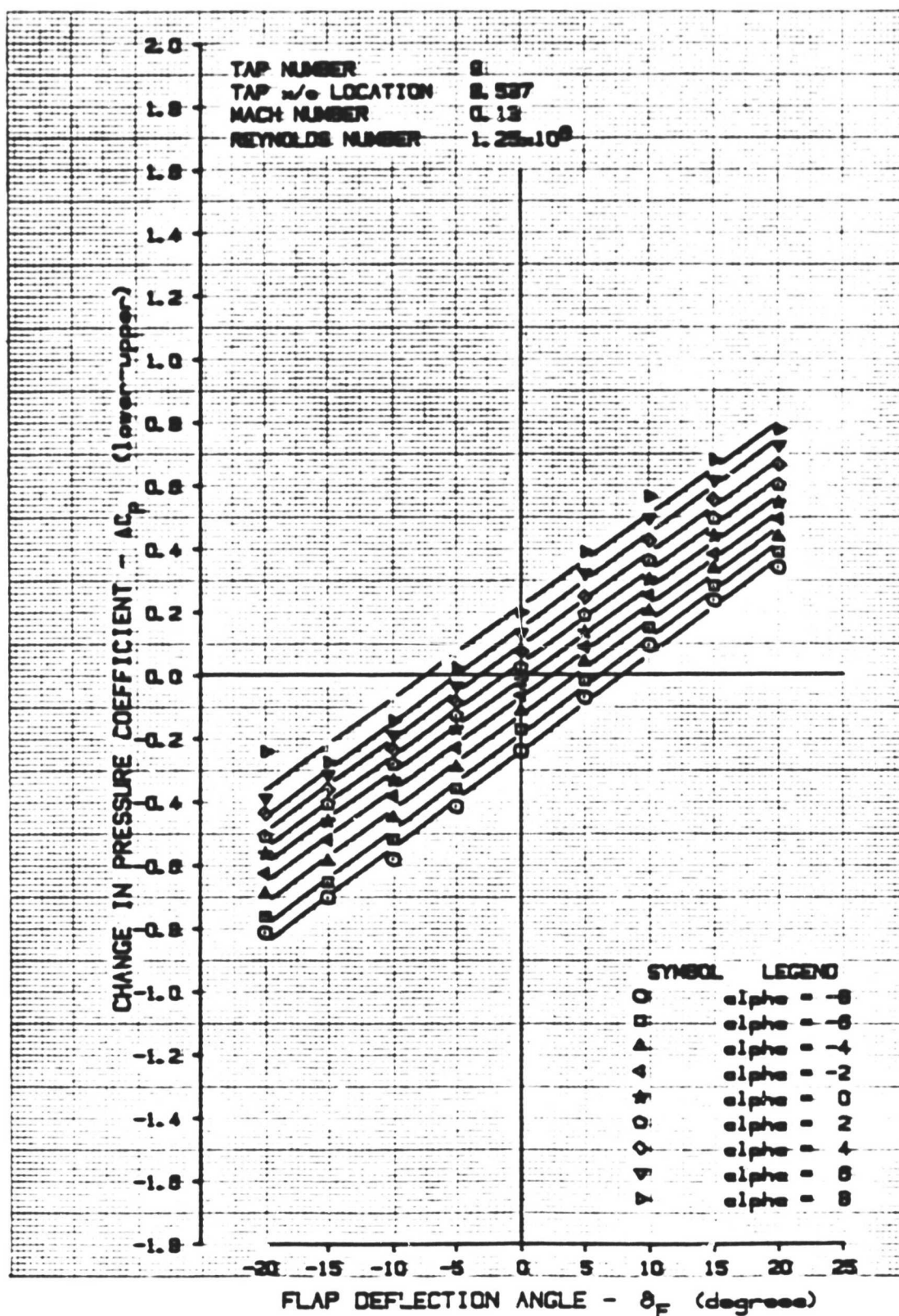
CALC	P. FINN	5-81	REVISED	DATE	FIGURE 8.7 EXPERIMENTAL CHANGE IN PRESSURE COEFFICIENTS - FLAP DEFLECTION SENSITIVITY	DATE 20-5-81
CHECK	D. LEVY	5/25/81				
APPO						
APPO						
UNIVERSITY OF KANSAS						PAGE 7b

NOTE: LOWER SURFACE C_p INTERPOLATED TO UPPER SURFACE TAP LOCATION



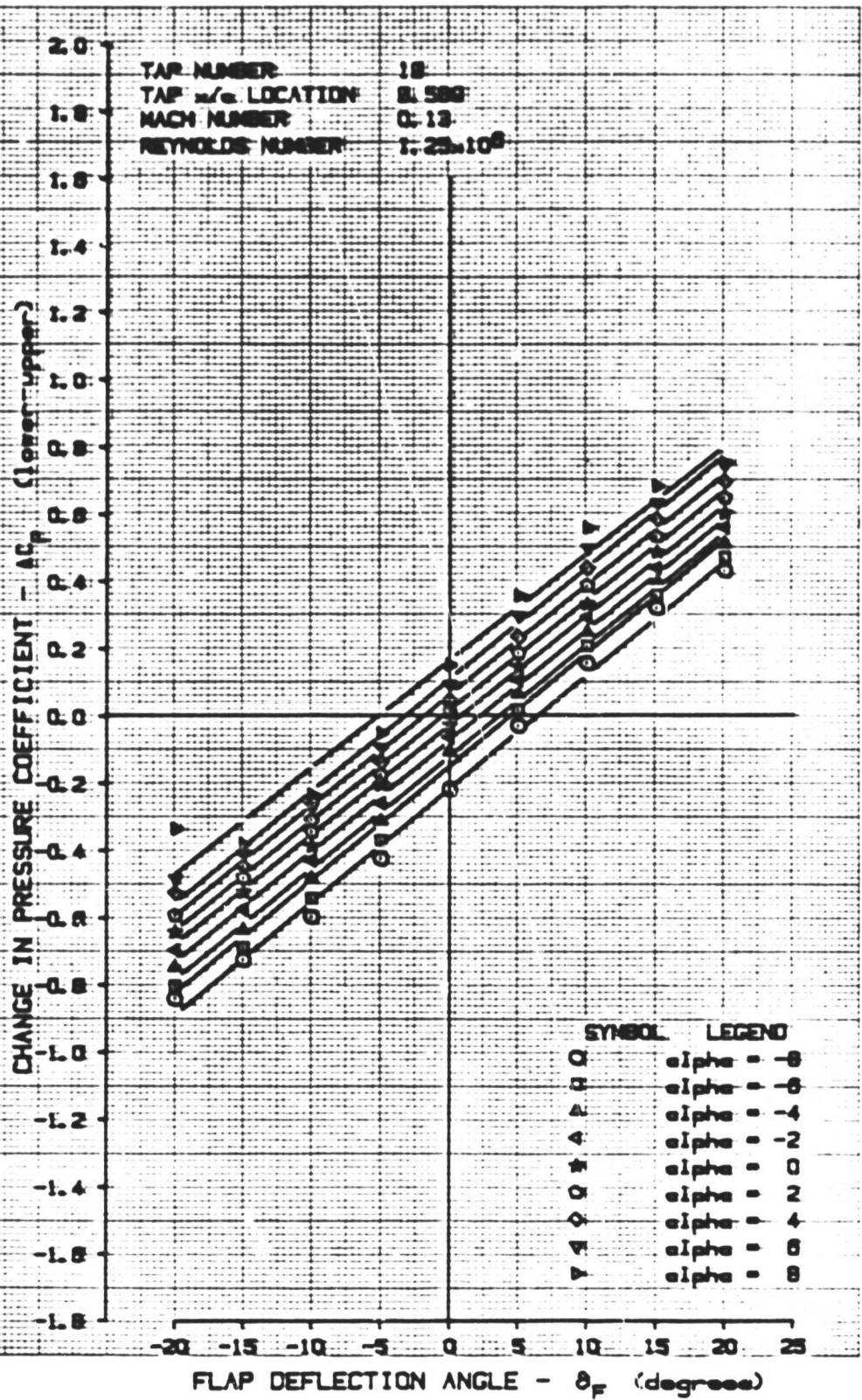
CALC	P. FINN	5-01	REVISED	DATE	FIGURE 8.8 EXPERIMENTAL CHANGE IN PRESSURE COEFFICIENTS - FLAP DEFLECTION SENSITIVITY	DATE 21-5-01
CHECK	D. LEVY	5/25/81				
APPO						
APPO						
					UNIVERSITY OF KANSAS	PAGE 77

NOTE: LOWER SURFACE C_p INTERPOLATED TO UPPER SURFACE TAP LOCATION



CALC	P. FINN	5-81	REVISED	DATE	FIGURE 8.9 EXPERIMENTAL CHANGE IN PRESSURE COEFFICIENTS - FLAP DEFLECTION SENSITIVITY	DATE 21-5-81
CHECK	D. LEVY	5/25/81				
APPO						
APPO						
UNIVERSITY OF KANSAS						PAGE 78

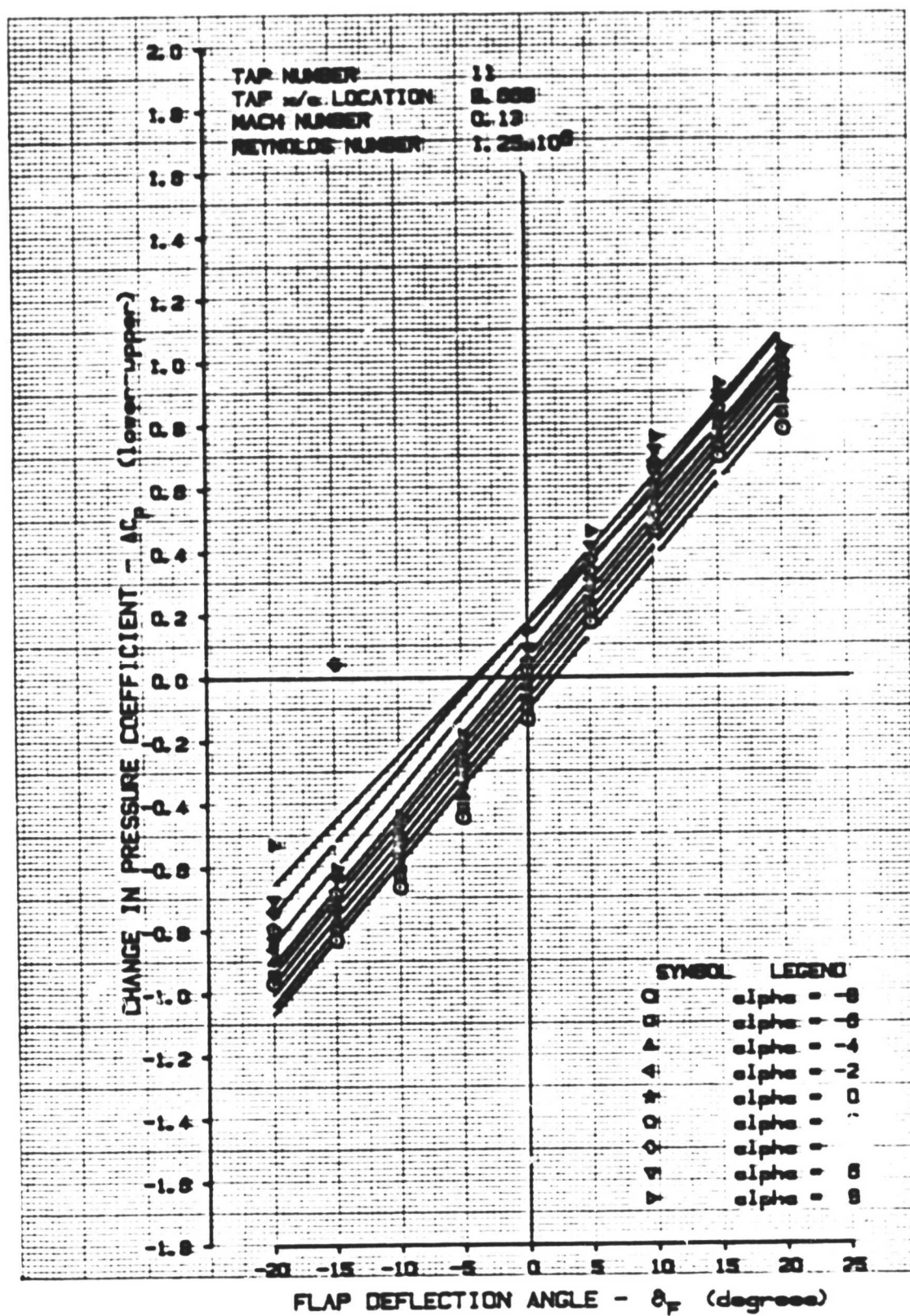
NOTE: LOWER SURFACE C_p INTERPOLATED TO UPPER SURFACE TAP LOCATION



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OF POOR QUALITY

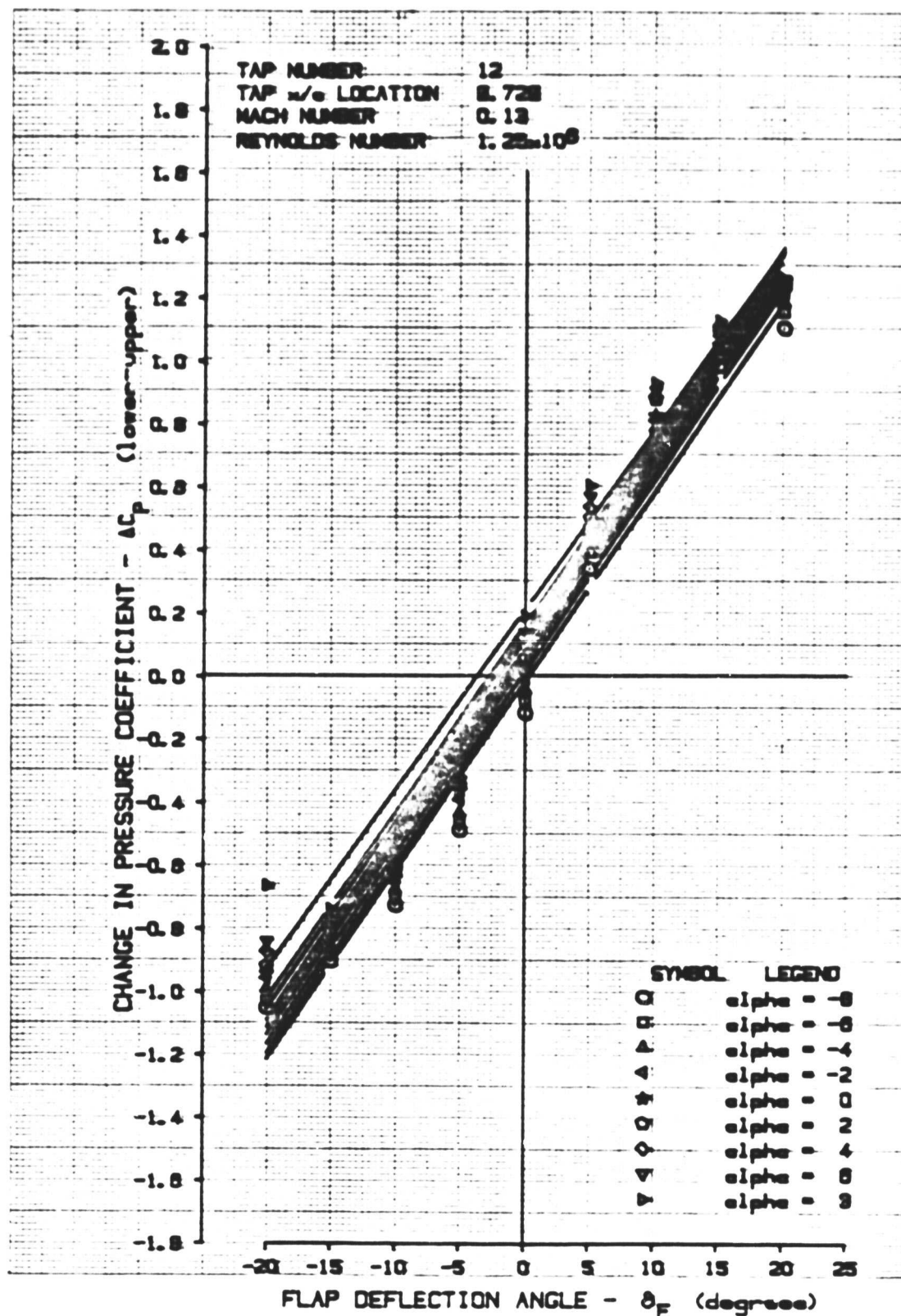
CALC	P. FINN	5-81	REVISED	DATE	FIGURE 8.10 EXPERIMENTAL CHANGE IN PRESSURE COEFFICIENTS - FLAP DEFLECTION SENSITIVITY	DATE
CHECK	D. LEVY	5/25/81				21-5-81
APPO						
APPO						
					UNIVERSITY OF KANSAS	PAGE 79

NOTE: LOWER SURFACE C_p INTERPOLATED TO UPPER SURFACE TAP LOCATION



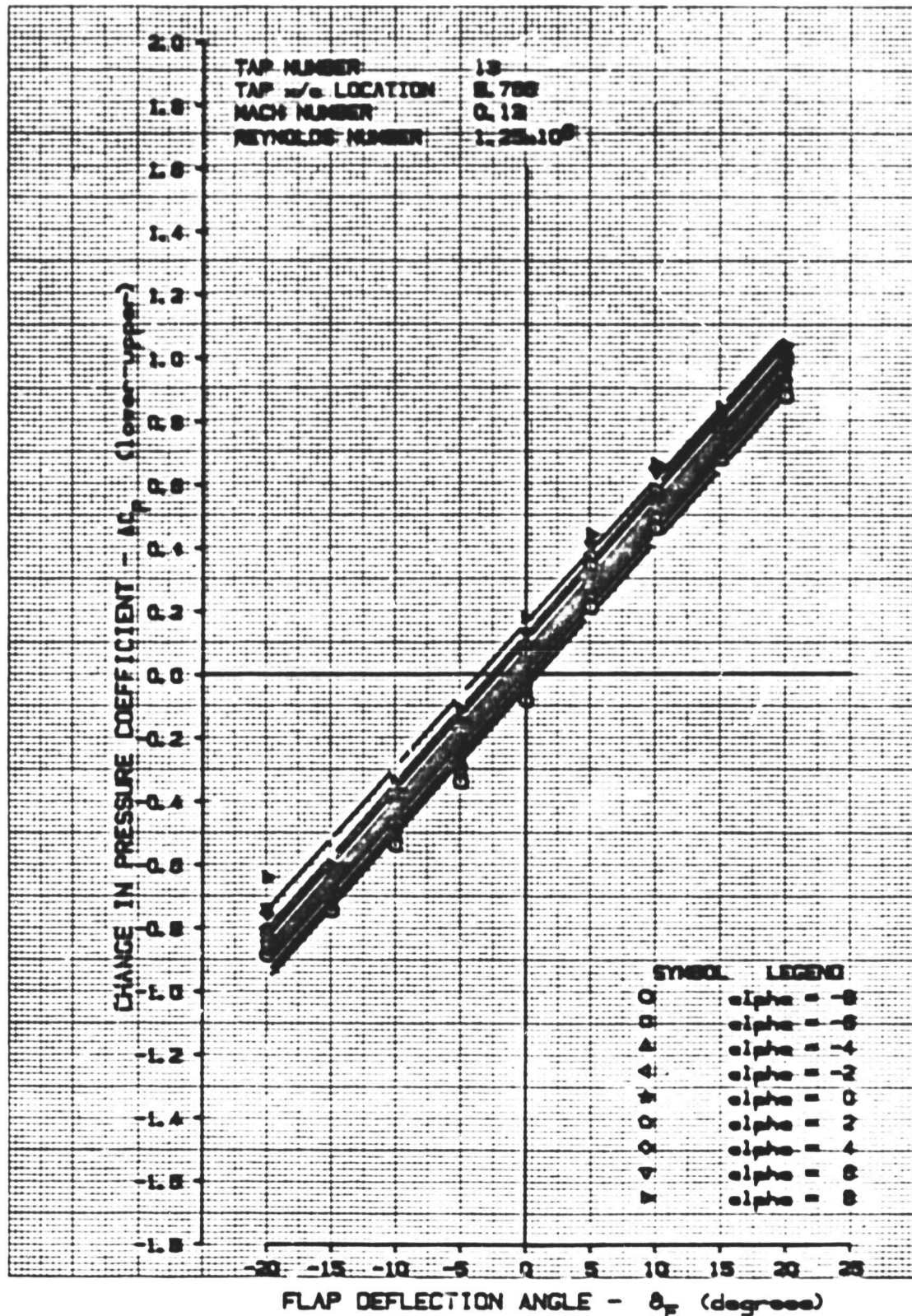
CALC	P. FINN	5-81	REVISED	DATE	FIGURE 8.11 EXPERIMENTAL CHANGE IN PRESSURE COEFFICIENTS - FLAP DEFLECTION SENSITIVITY	DATE 21-5-81
CHECK	D. LEVY	5/25/81				
APPO						
APPO						
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NOTE: LOWER SURFACE C_p INTERPOLATED TO UPPER SURFACE TAP LOCATION



CALC	P. FINN	5-81	REVISED	DATE	FIGURE 8.12 EXPERIMENTAL CHANGE IN PRESSURE COEFFICIENTS - FLAP DEFLECTION SENSITIVITY	DATE
CHECK	D. LEVY	5/25/81				21-5-81
APPO						
APPO						
UNIVERSITY OF KANSAS						PAGE 81

NOTE: LOWER SURFACE C_p INTERPOLATED TO UPPER SURFACE TAP LOCATION

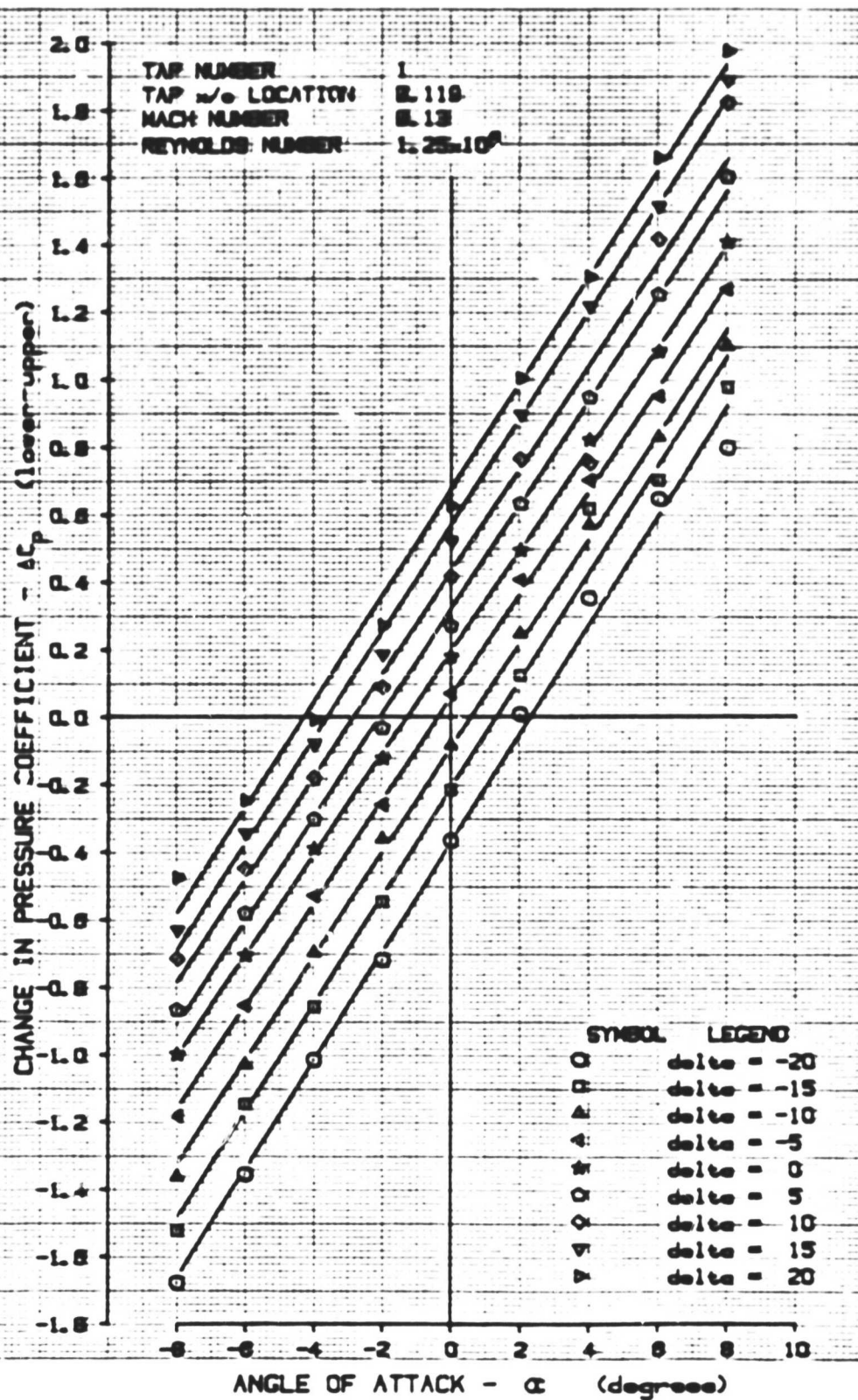


CALC	P. FINN	5-81	REVISED	DATE	FIGURE 8.13 EXPERIMENTAL CHANGE IN PRESSURE COEFFICIENTS - FLAP DEFLECTION SENSITIVITY	DATE
CHECK	D. LEVY	5/25/81				21-5-81
APPO						
APPO						
					UNIVERSITY OF KANSAS	PAGE 82

9. GRAPHICAL PRESENTATION--ANGLE OF ATTACK SENSITIVITY

This chapter re-plots the data of Chapter 7 against angle of attack. Now, the steepness of the slopes represent sensitivity to angle of attack, and the spread represents sensitivity to flap deflection.

NOTE: LOWER SURFACE C_p INTERPOLATED TO UPPER SURFACE TAP LOCATION



CALC	P. FINN	5-81	REVISED	DATE
CHECK	D. LEVY	5/25/81		
APPO				
APPO				

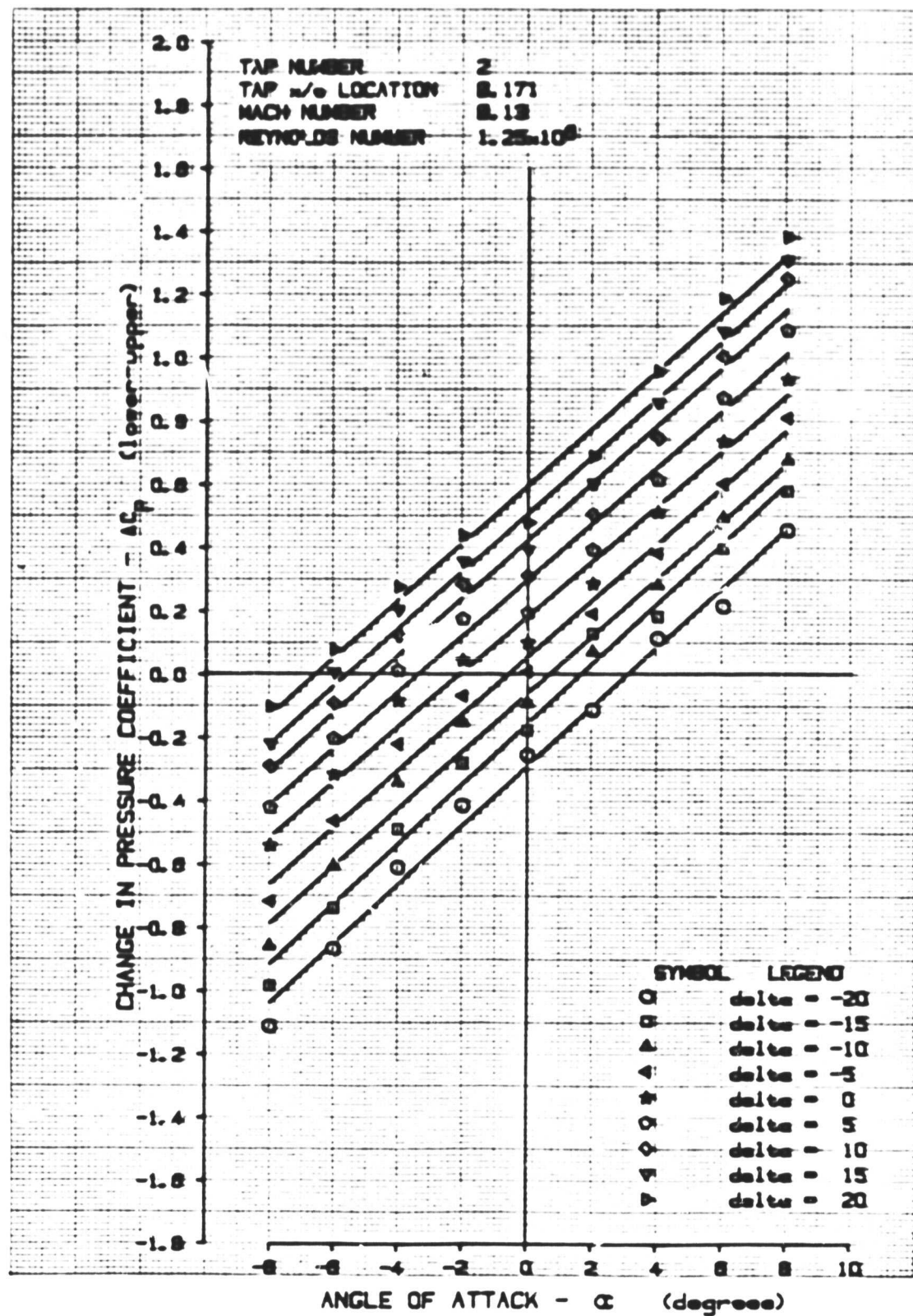
FIGURE 9.1 EXPERIMENTAL CHANGE IN
PRESSURE COEFFICIENTS
- ANGLE OF ATTACK
SENSITIVITY

UNIVERSITY OF KANSAS

DATE
28-5-81

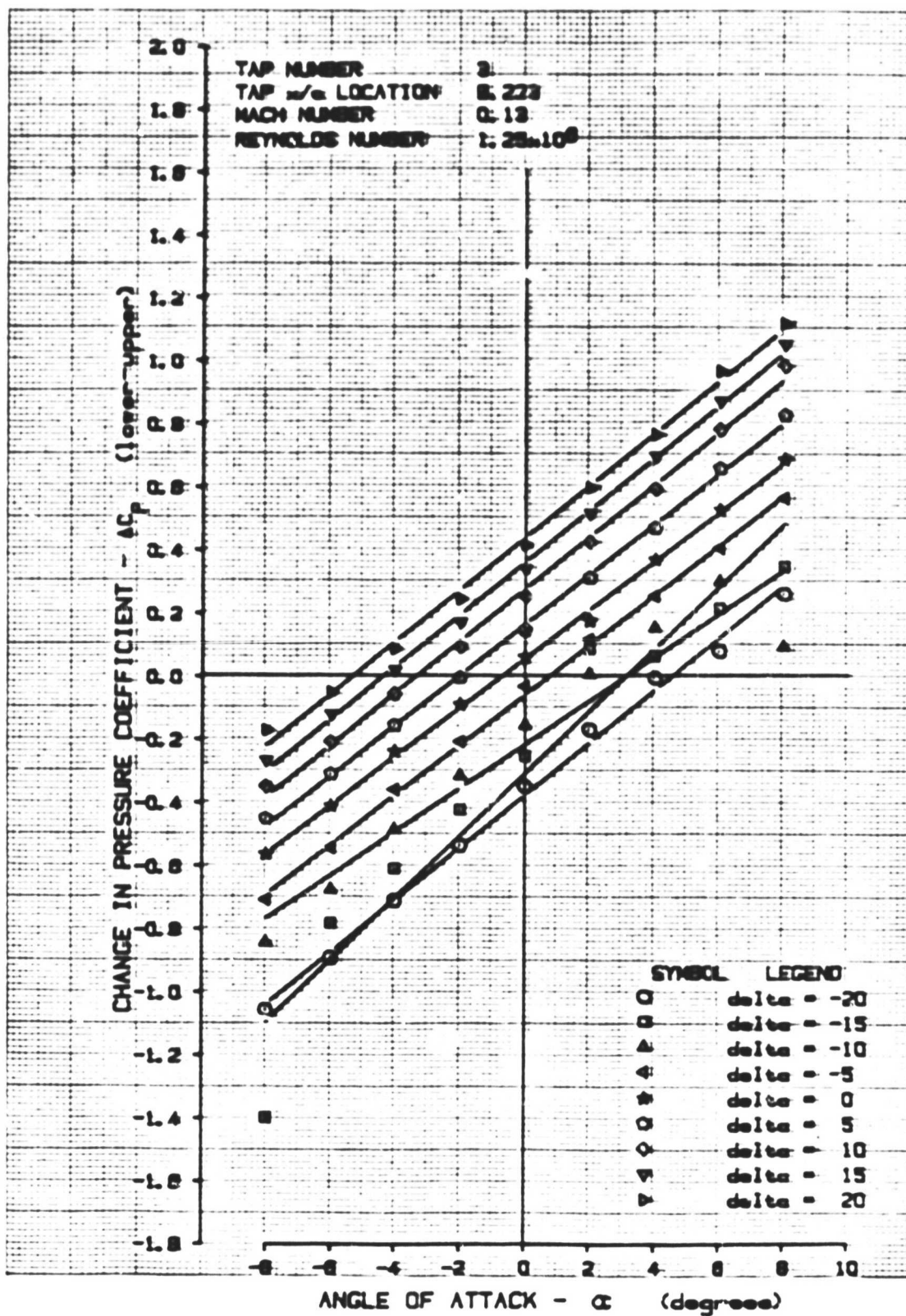
PAGE
84

NOTE: LOWER SURFACE C_p INTERPOLATED TO UPPER SURFACE TAP LOCATION



CALC	P. FINN	5-81	REVISED	DATE	FIGURE 9.2 EXPERIMENTAL CHANGE IN PRESSURE COEFFICIENTS - ANGLE OF ATTACK SENSITIVITY	DATE
CHECK	D. LEVY	5/25/81				20-5-81
APPO						
APPO						
					UNIVERSITY OF KANSAS	PAGE 85

NOTE: LOWER SURFACE C_p INTERPOLATED TO UPPER SURFACE TAP LOCATION



CALC	P. FINN	5-81	REVISED	DATE
CHECK	D. LEVY	5/25/81		
APPD				
APPD				

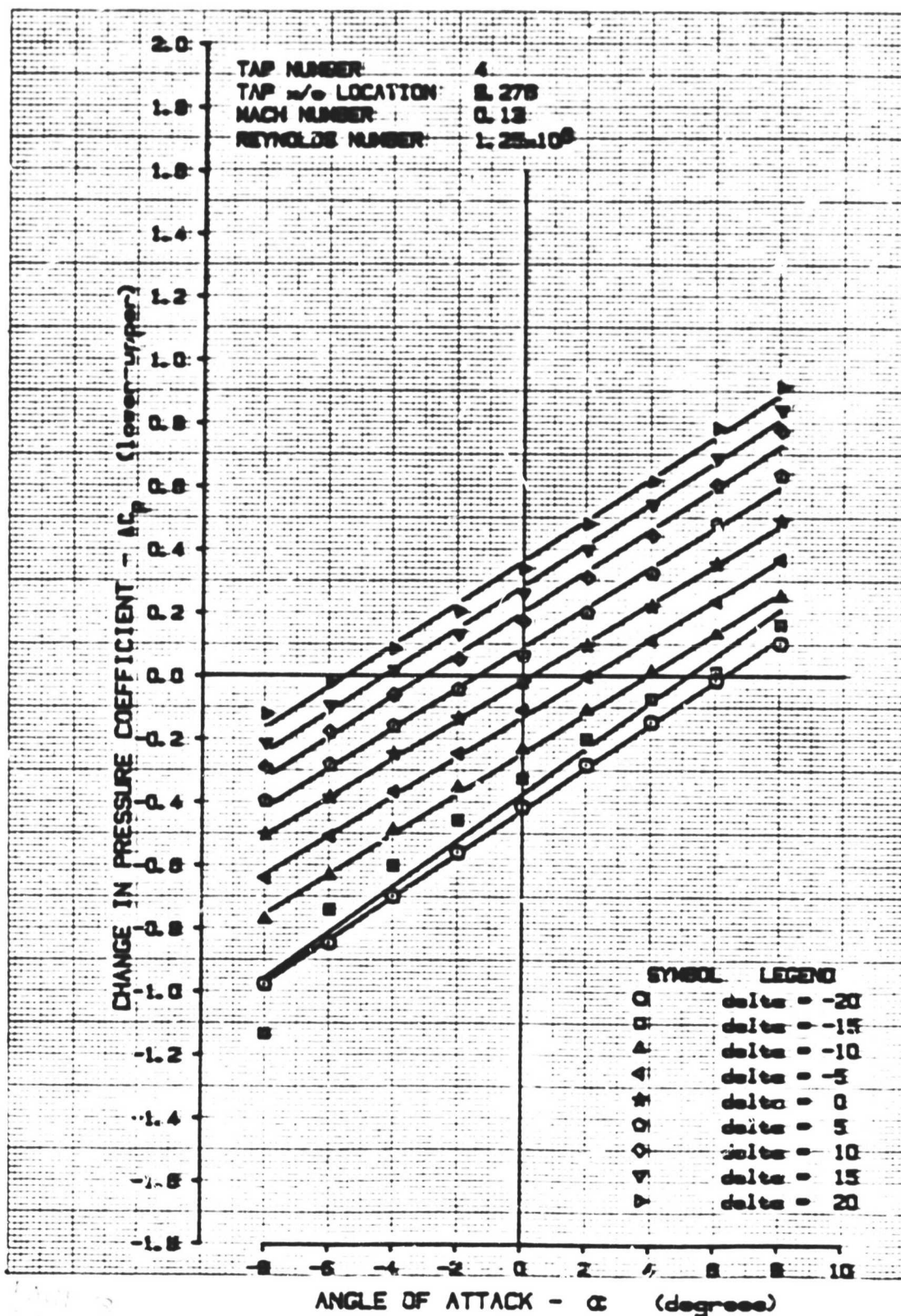
FIGURE 9.3 EXPERIMENTAL CHANGE IN PRESSURE COEFFICIENTS - ANGLE OF ATTACK SENSITIVITY

UNIVERSITY OF KANSAS

DATE
20-5-81

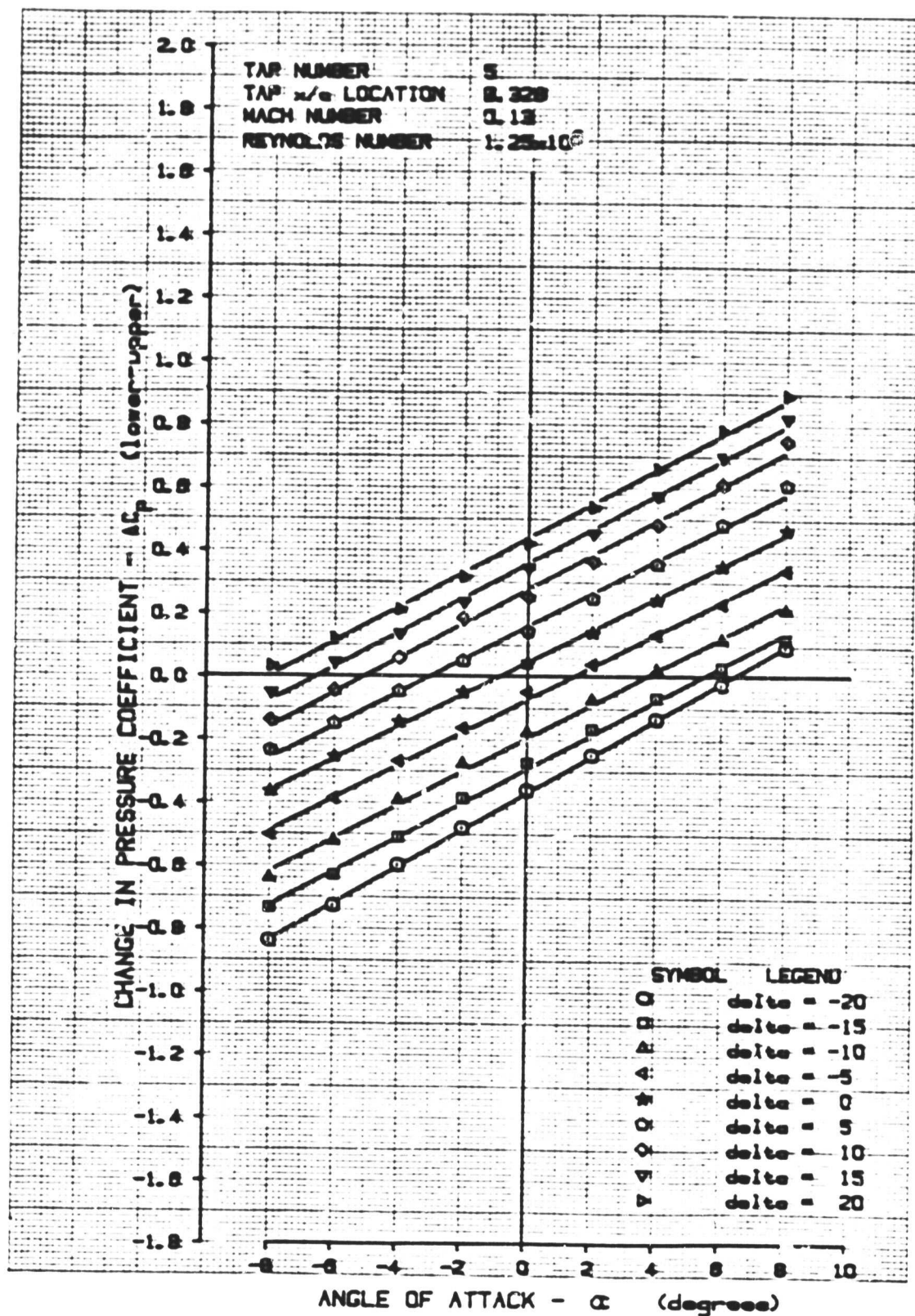
PAGE 55

NOTE: LOWER SURFACE C_p INTERPOLATED TO UPPER SURFACE TAP LOCATION



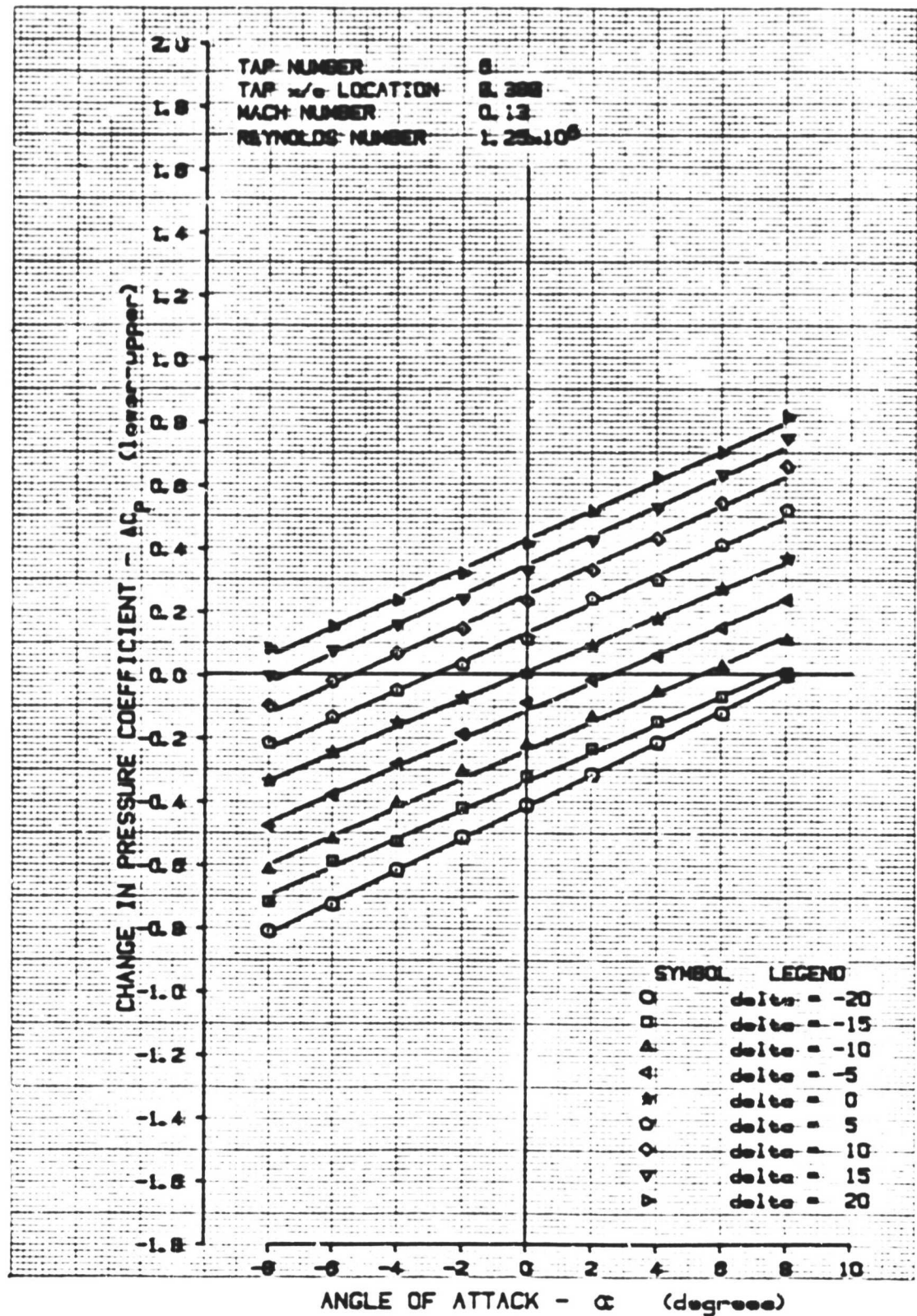
CALC	P. FINN	5-81	REVISED	DATE	FIGURE 9.4 <u>EXPERIMENTAL CHANGE IN</u> <u>PRESSURE COEFFICIENTS</u> <u>-- ANGLE OF ATTACK</u> <u>SENSITIVITY</u>	DATE 20-5-81
CHECK	D. LEVY	5/25/81				
APPO						
APPO						
UNIVERSITY OF KANSAS						PAGE 87

NOTE: LOWER SURFACE C_p INTERPOLATED TO UPPER SURFACE TAP LOCATION



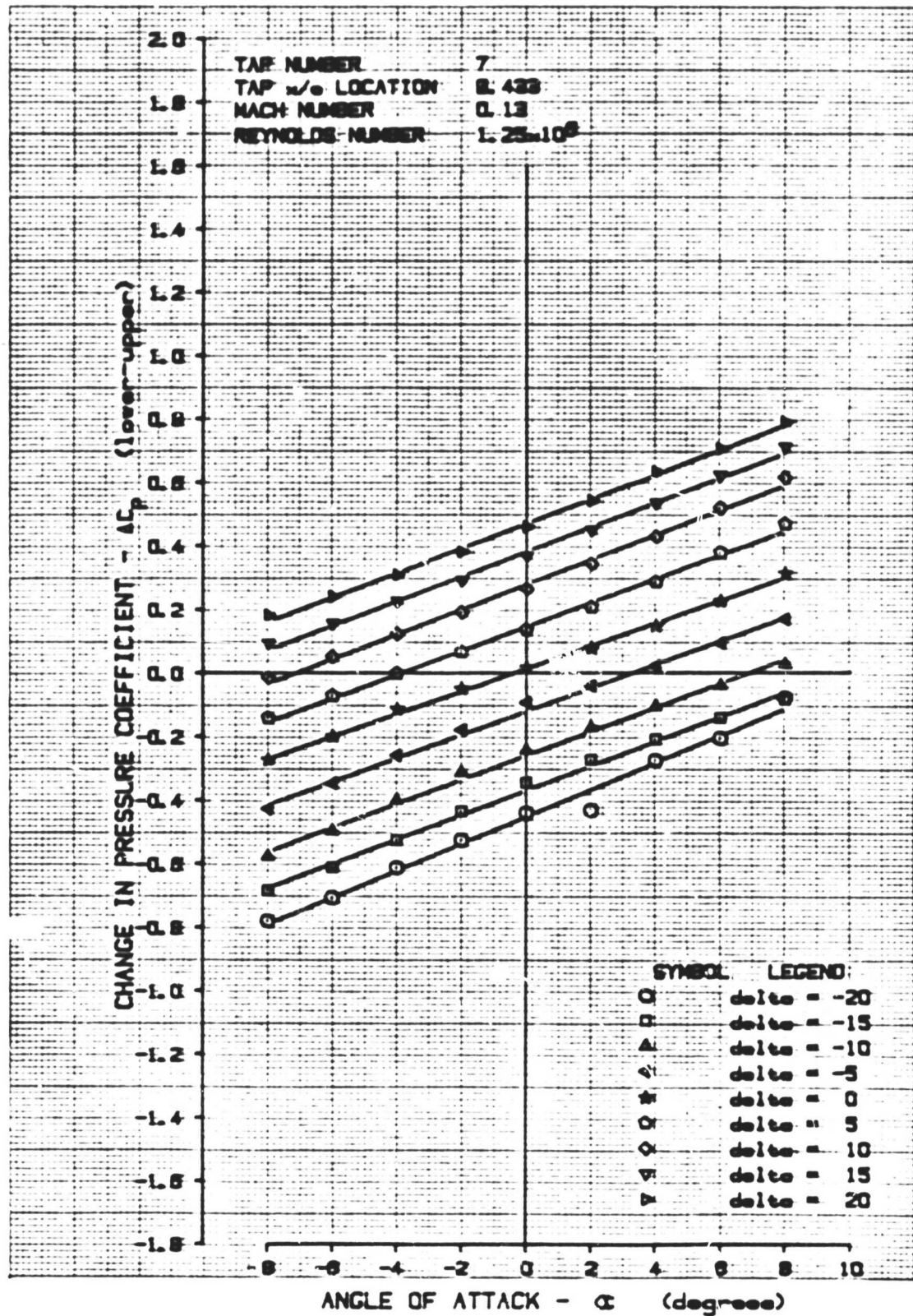
CALC	F. FINN	5-81	REVISED	DATE	FIGURE 9.5 EXPERIMENTAL CHANGE IN PRESSURE COEFFICIENTS - ANGLE OF ATTACK SENSITIVITY	DATE
CHECK	D. LEVY	5/25/81				20-5-81
APPO						
APPO						
					UNIVERSITY OF KANSAS	PAGE 88

NOTE: LOWER SURFACE C_p INTERPOLATED TO UPPER SURFACE TAP LOCATION



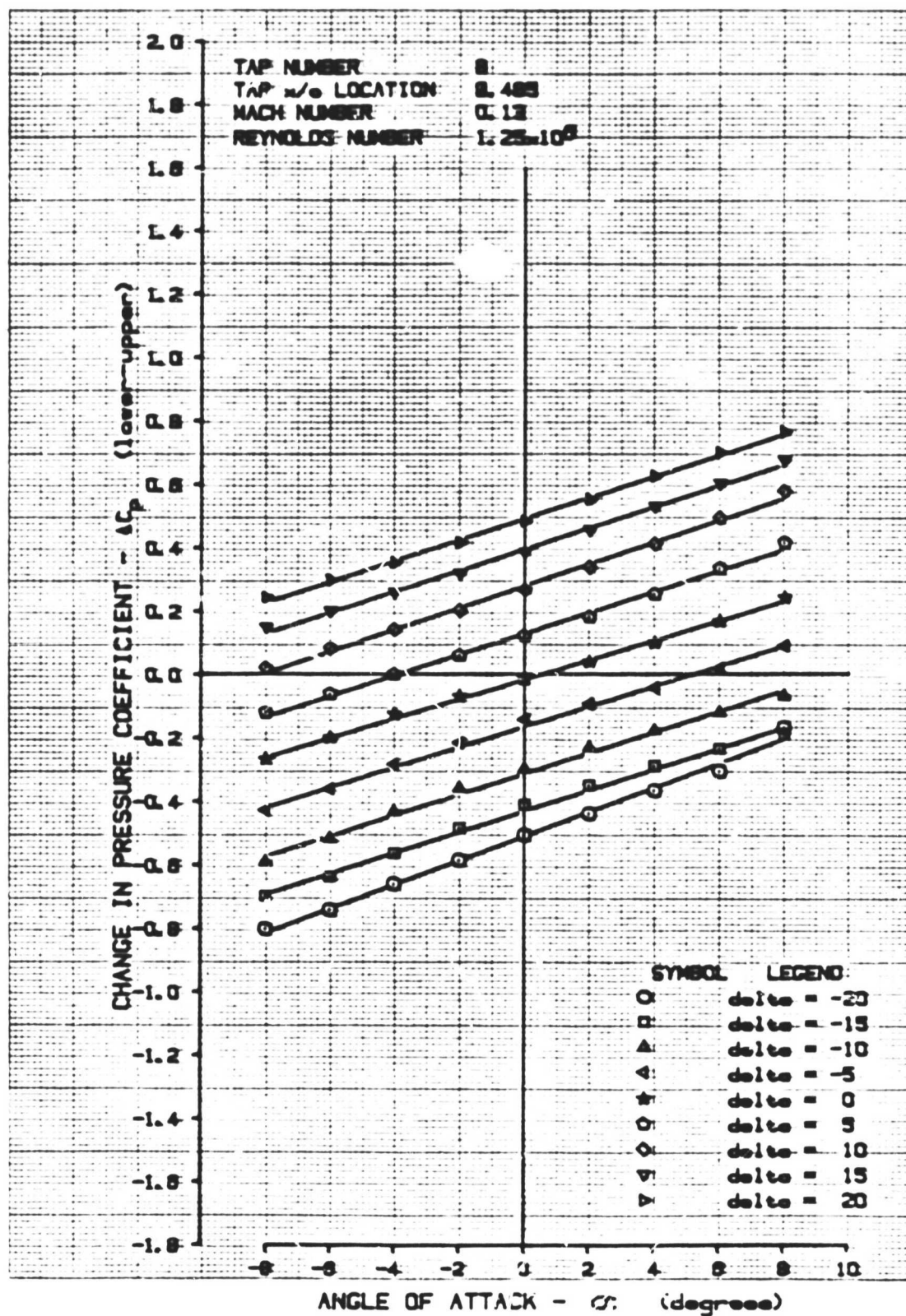
CALC	P. FINN	5-1	REVISED	DATE	FIGURE 9.6 EXPERIMENTAL CHANGE IN PRESSURE COEFFICIENTS - ANGLE OF ATTACK SENSITIVITY	DATE 20-5-81
CHECK	D LEVY	5/25/81				
APPO						
APPO						
					UNIVERSITY OF KANSAS	PAGE 89

NOTE: LOVER SURFACE C_p INTERPOLATED TO UPPER SURFACE TAP LOCATION



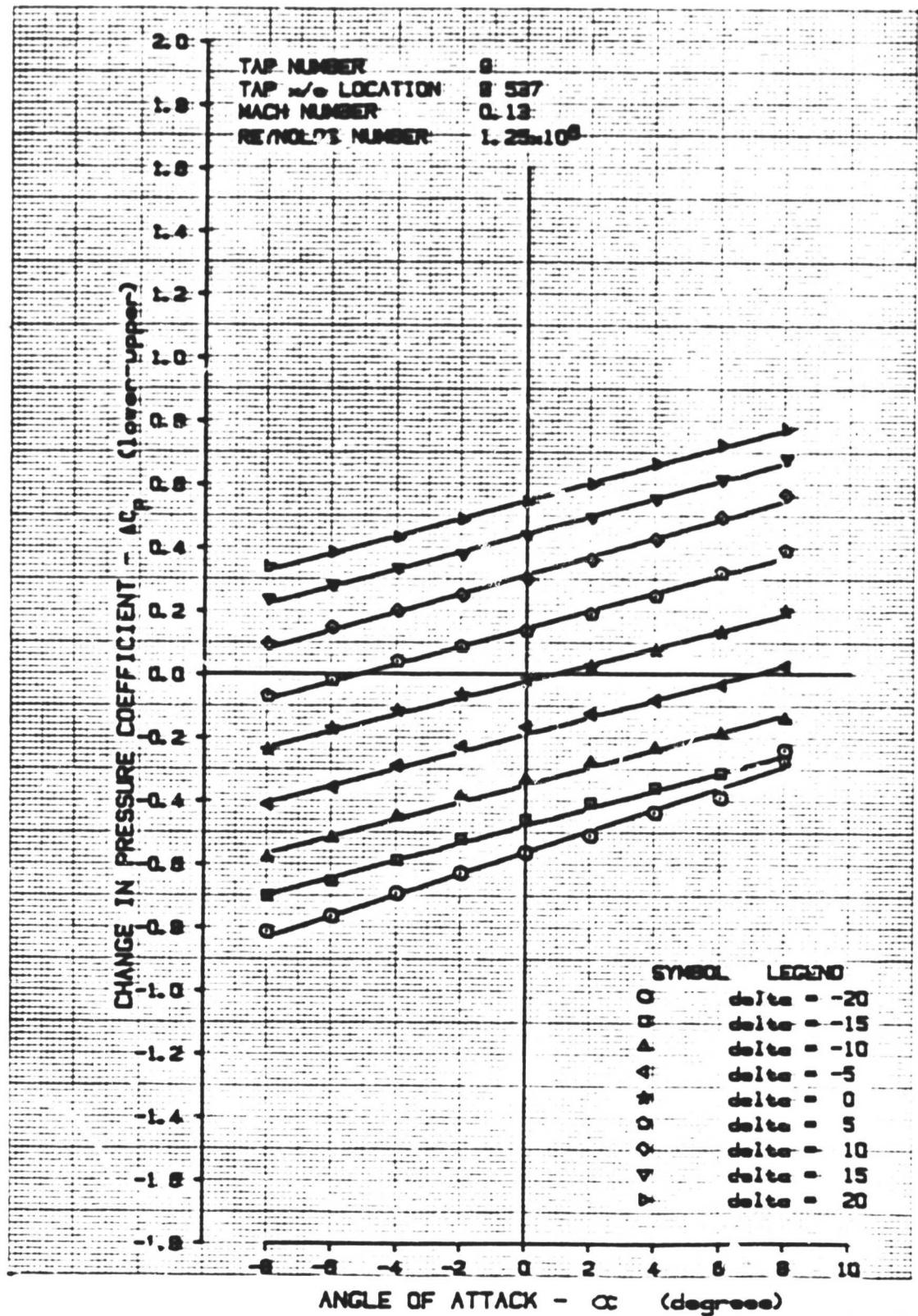
CALC	P. FINN	5-81	REVISED	DATE	FIGURE 9.7 <u>EXPERIMENTAL CHANGE IN</u> <u>PRESSURE COEFFICIENTS</u> <u>- ANGLE OF ATTACK</u> <u>SENSITIVITY</u>	DATE 20-5-81
CHECK	D. LEVY	5/2/81				
APPO						
APPO						
					UNIVERSITY OF KANSAS	PAGE 90

NOTE: LOWER SURFACE C_p INTERPOLATED TO UPPER SURFACE TAP LOCATION



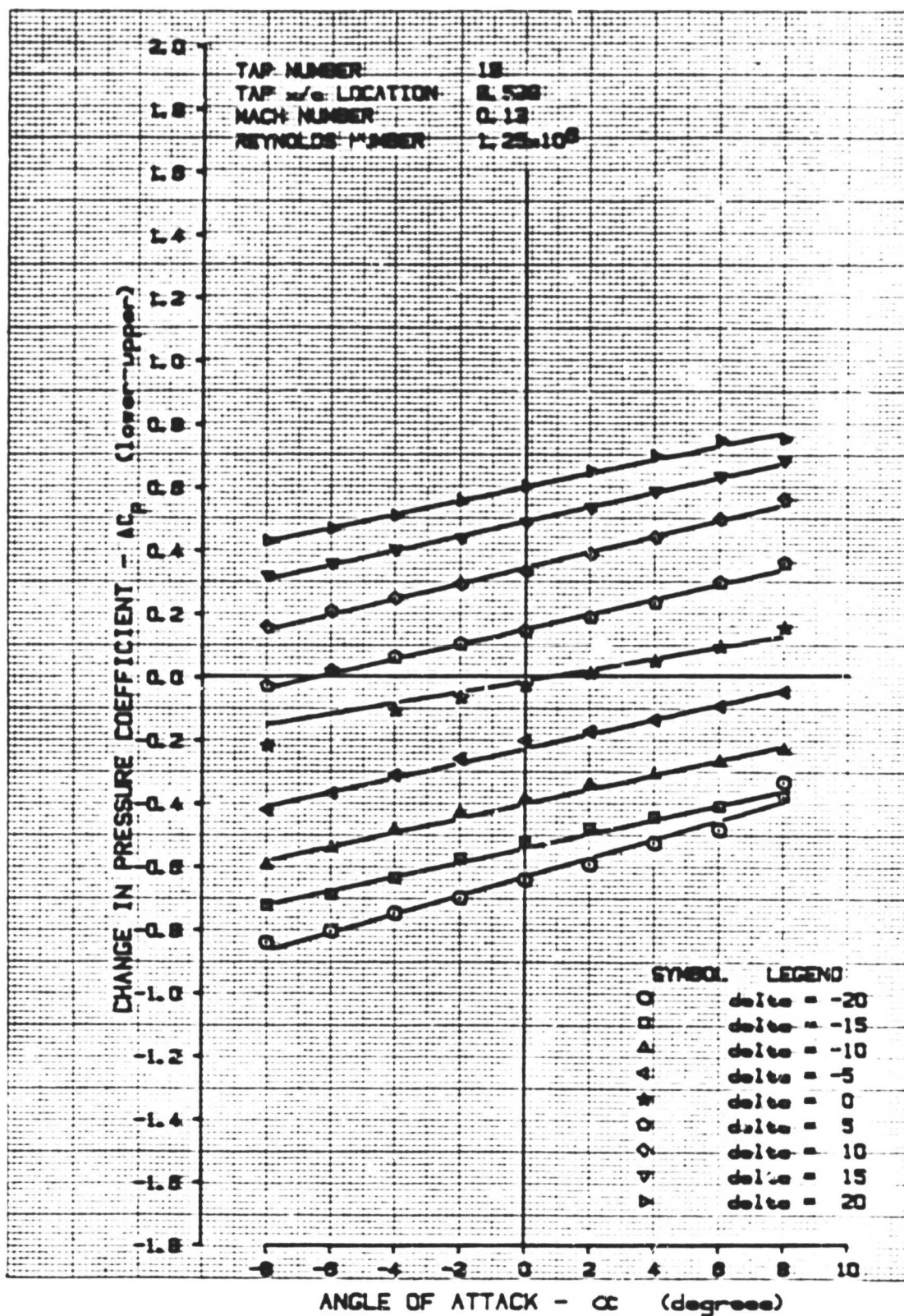
CALC	P. FINN	5-01	REVISED	DATE	FIGURE 9.8 EXPERIMENTAL CHANGE IN PRESSURE COEFFICIENTS - ANGLE OF ATTACK SENSITIVITY	DATE 20-5-01
CHECK	D. LEVY	5/15/61				
APPD						
APPC						
					UNIVERSITY OF KANSAS	PAGE 91

NOTE: LOWER SURFACE C_p INTERPOLATED TO UPPER SURFACE TAP LOCATION



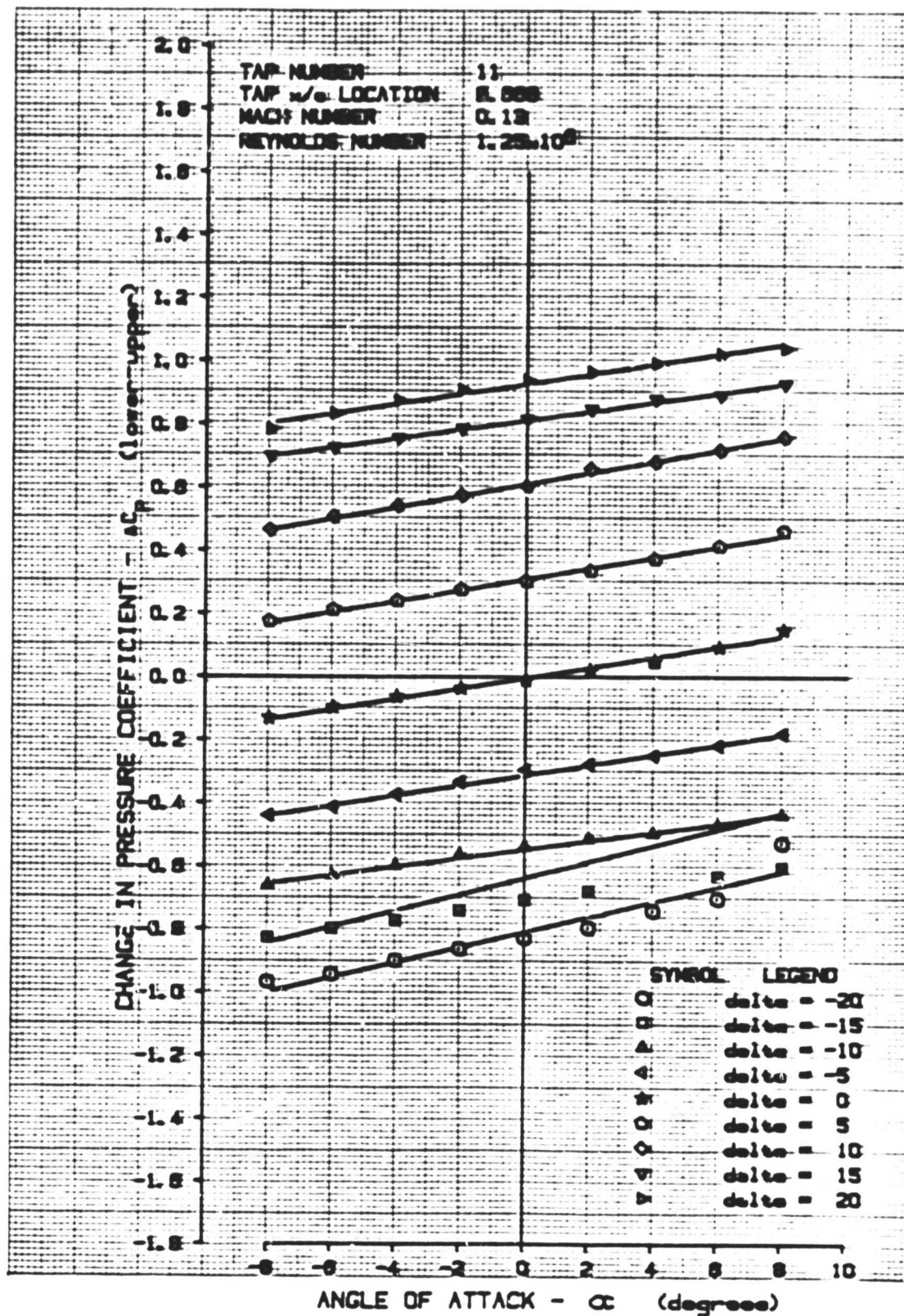
CALC	P. FINN	5-81	REVISED	DATE	FIGURE 9.9 EXPERIMENTAL CHANGE IN <u>PRESSURE COEFFICIENTS</u> - <u>ANGLE OF ATTACK</u> <u>SENSITIVITY</u>	DATE 21-5-81
CHECK	D. LEVY	5/25/81				
APPO						
APPO						
					UNIVERSITY OF KANSAS	PAGE 92

NOTE: LOWER SURFACE C_p INTERPOLATED TO UPPER SURFACE TAP LOCATION



CALC	P. FINN	5-81	REVISED	DATE	FIGURE 9.10 EXPERIMENTAL CHANGE IN PRESSURE COEFFICIENTS - ANGLE OF ATTACK SENSITIVITY	DATE
CHECK	D. LEVY	5/15/81				21-5-81
APPO						
APPO						
UNIVERSITY OF KANSAS						PAGE 93

NOTE: LOWER SURFACE C_p INTERPOLATED TO UPPER SURFACE TAP LOCATION



CALC	P. FINN	5-81	REVISED	DATE
CHECK	C. LEVY	5/25/81		
APPO				
APFD				

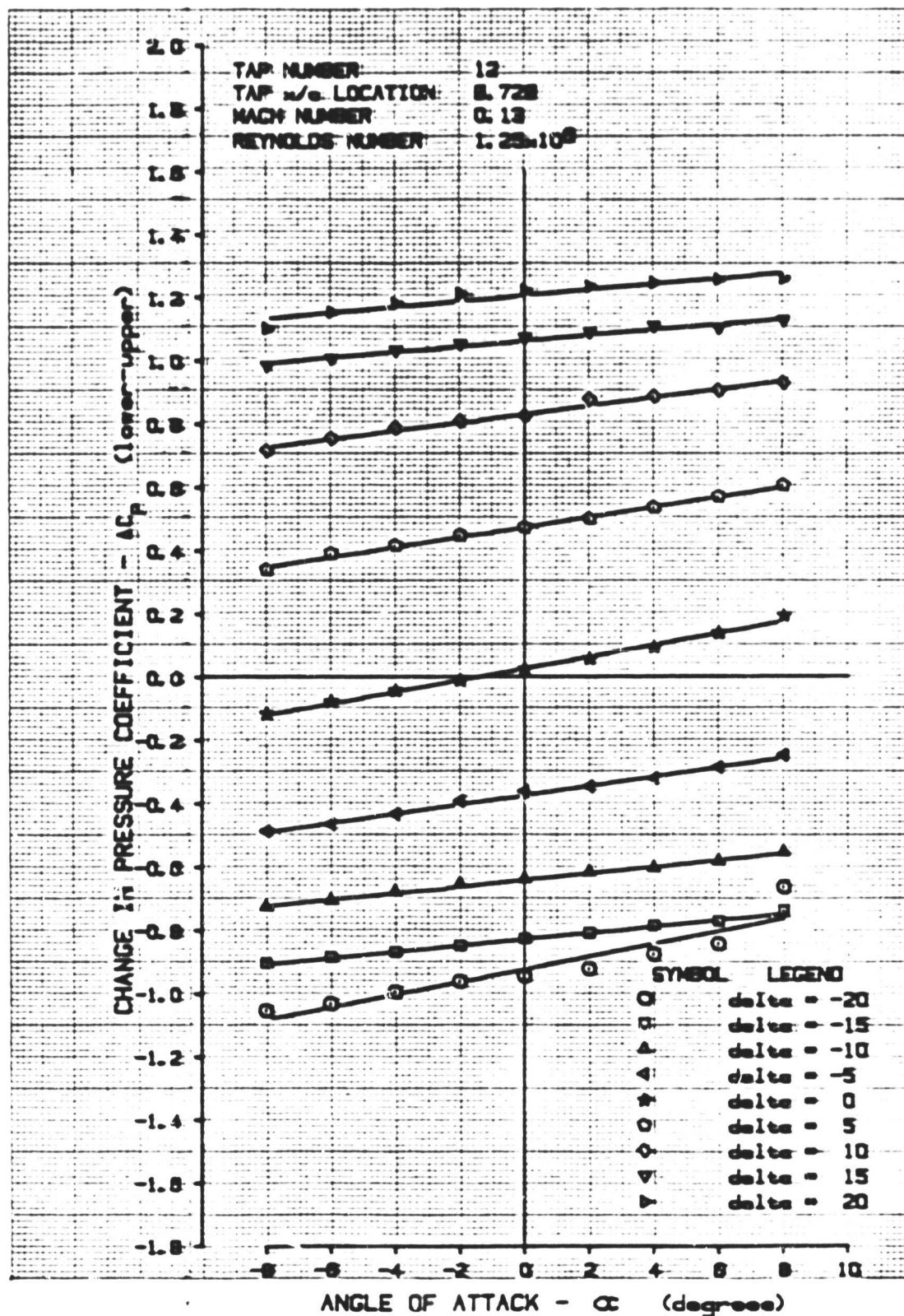
FIGURE 9.11 EXPERIMENTAL CHANGE IN PRESSURE COEFFICIENTS - ANGLE OF ATTACK SENSITIVITY

UNIVERSITY OF KANSAS

DATE
21-5-81

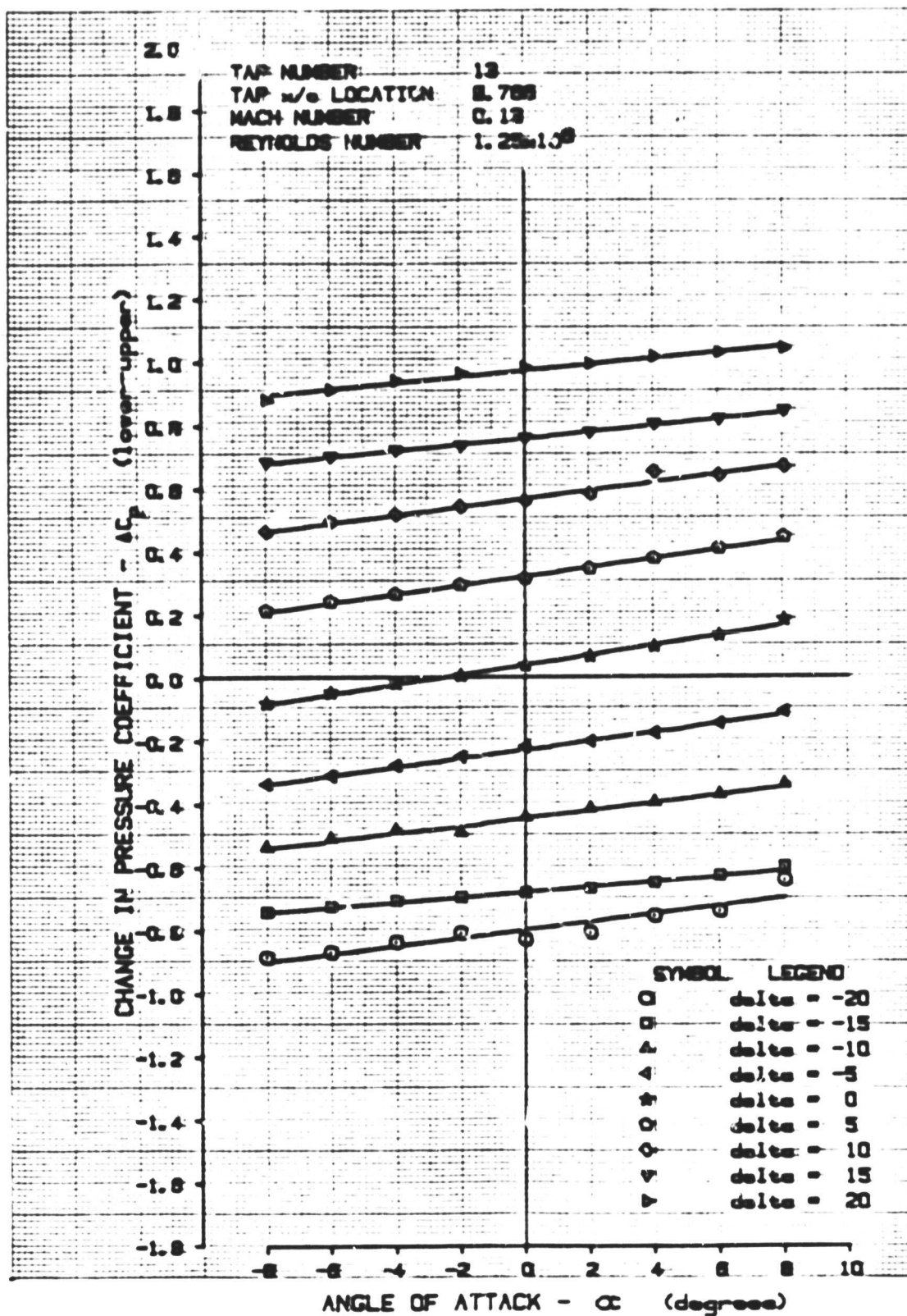
PAGE
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NOTE: LOWER-SURFACE C_p INTERPOLATED TO UPPER SURFACE TAP LOCATION



CALC	P. FILM	5-81	REVISED	DATE	FIGURE 9.12 EXPERIMENTAL CHANGE IN PRESSURE COEFFICIENTS - ANGLE OF ATTACK SENSITIVITY	DATE 21-5-81
CHECK	D. LEVY	5/25/81				
APPO						
APPO						
					UNIVERSITY OF KANSAS	PAGE 95

NOTE: LOWER SURFACE C_p INTERPOLATED TO UPPER SURFACE TAP LOCATION



CALC	P. FINN	5-81	REVISED	DATE	FIGURE 9.13 EXPERIMENTAL CHANGE IN PRESSURE COEFFICIENTS - ANGLE OF ATTACK SENSITIVITY	DATE 21-3-81
CHECK	D. LEVY	5/25/81				
APPO						
APPO						
					UNIVERSITY OF KANSAS	PAGE 9b

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01: "HP 9825A DATA PLOTTING PROGRAM DELTA P PROJECT 02 specific x/c"
1: dim Q(18),X(60),Y(60),L(60),P(4),P(10),M(10),I(0:10),A(32)
2: dim B(9,9),P,XIurt 795,"VS10"
3: dim R(61),F(23),D(10),B(3),K(16),A(3),D(70),E(70)
4: trk 1
5: ent "YOUR NAME(13 spaces)?",F6
6: ent "TODAY'S DATE (10 spaces)?",D6
7: ((.1Q(11))+2+((.1Q(12)+2)+2)+.5+E
8: "PLACE"ent "FILE NUMBER?",F11 if F>32 or F<11been1eto +0
9: trk 11fdf F11df F,B(+),P,X
10: 14+Q(1)+20+Q(2)+4+Q(3)+Q(4)+.5+Q(5)+.5+Q(6)+9+Q(7)+19+Q(8)
11: -1.8+Q(10)+X+J
12: .2+Q(12)
13: 1+Q(13)+Q(14)+Q(16)
14: 0+Q(15)
15: -1+Q(17)+Q(18)
16: "CHANGE IN PRESSURE COEFFICIENT - (lower-upper)"*Y8
17: ent "ALPHA(1) or DELTA(2) ??",M11 if M<1 or M>21been1eto +0
18: if M=1esb "AX"
19: if M=2esb "DX"
20: ((.1Q(11))+2+25((.1Q(12))+2)+.5+.9+E
21: dsp "prepare plotter and CONTINUE"1sto
22: X8+L8ifxd Q(15)
23: c11 "XAX"(Q(1),Q(2),Q(3),Q(5),Q(7),Q(9),Q(11),Q(13),Q(17))
24: if M=1esb "alpha"
25: if M=2esb "deltaF"
26: Y8+L8ifxd Q(16)
27: c11 "YAX"(Q(1),Q(2),Q(4),Q(6),Q(8),Q(10),Q(12),Q(14),Q(18))
28: esb "DCSP"
29: if M=1eto 49
30: scl P(1),P(2),P(3),P(4)
31: plt -25,0,-21plt 25,0,-11plt 0,-1.8,-21plt 0,1.5,-1
32: for A=1 to 91for S=1 to 91(S-5)+D
33: plt D,B(S,A),-21pen1A+M(A)
34: if A=4111+M(A)
35: if A=9112+M(A)
36: c11 "symbol"(M(A),(P(2)-P(1))/Q(1),(F(4)-P(3))/Q(2))
37: next S1next A1esb "STAR"
38: scl 0,Q(1),0,Q(2)icsiz 20/Q(2),1.5,Q(2)/Q(1)
39: ent "Locate top left of Legend: X Div",G,Y
40: plt G,Y,1ent "Is this location satisfactory?",P8
41: if cap(P8)@"Y"1eto -2
42: lbl "SYMBOL LEGEND"1pen1c1t -9,-11fxd 0
43: "alpha" = "L8ifor M=1 to 91(M-5)+S1str(S)+L8(9,12)
44: M+B11 if M=4111+B
45: if M=9112+B
46: if pos(L8,"0")#01"0"+L8(pos(L8,"0"),pos(L8,"0"))11 if pos(L8,"0")#01eto +0
47: c1t -6.7,.31c11 "symbol"(B,1,1)1c1t 6.7,-.311bl L81c1t -len(L8),-1
48: next M1eto 69
49: scl P(1),P(2),P(3),P(4)
50: plt -10,0,-21plt 10,0,-11plt 0,-1.8,-21plt 0,1.5,-1
51: for S=1 to 91for D=1 to 91(D-5)+A
52: plt A,B(S,D),-21pen1S+M(S)
53: if S=9112+M(S)
54: if S=4111+M(S)
55: c11 "symbol"(M(S),(P(2)-P(1))/Q(1),(F(4)-P(3))/Q(2))
56: next D1next S1esb "STAR"
57: scl 0,Q(1),0,Q(2)icsiz 20/Q(2),1.5,Q(2)/Q(1)
58: ent "Locate top left of Legend: X Div",G,Y
59: plt G,Y,1ent "Is this location satisfactory?",P8
60: if cap(P8)@"Y"1eto -2
61: lbl "SYMBOL LEGEND"1pen1c1t -9,-11fxd 0
62: "delta" = "L8ifor M=1 to 91(M-5)+S1str(S)+L8(9,12)
63: M+B11 if M=4111+B
64: if M=9112+B
65: if pos(L8,"0")#01"0"+L8(pos(L8,"0"),pos(L8,"0"))11 if pos(L8,"0")#01eto +0
66: c1t -6.7,.31c11 "symbol"(B,1,1)1c1t 6.7,-.311bl L81c1t -len(L8),-1
67: next M
68: "LABEL"icsiz 1,1.5,1.43,0
69: ent "Label coordinates? X-coordinate",G1ent Y1ent G,Y,1
70: ent "Is this location satisfactory?",P8
71: if cap(P8)@"Y"1eto -2
72: fxd 31str(J)+P8
73: if pos(P8,"0")#01"0"+P8(pos(P8,"0"),pos(P8,"0"))11 if pos(P8,"0")#01eto +0
74: fnd 011bl "TAP NUMBER",P1fxd 31ent G,Y,11c1t 0,-.9
75: 1bl "TAP x/c LOCATION",P1ent G,Y,11c1t 0,-1.8
76: 1bl "MACH NUMBER 0.13"1c1t -23,-1
77: 1bl "REYNOLDS NUMBER 1.25x10"1c1t -.05,.211bl "6"
78: plt 7,20.5,11c1t -34,0
79: 1bl "NOTE: LOWER SURFACE Cp INTERPOLATED TO UPPER SURFACE TAP LOCATION"
80: scl 0,14,0,20icsiz 1,1.5,1.43,0

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81: plt 1.1,-1.25,-11calt -len(F8)/2,-11lbl F8
82: plt 14.2,-1.6,-11lbl "DATE"
83: calt .1,01calt -len(D8)/2,-11lbl D8
84: csiz 1.2,1.5,1.43,0
85: plt 9.6,-1.3,-11calt -9,-11lbl "CHANGE IN PRESSURE"
86: calt -22,-11lbl "COEFFICIENTS BETWEEN UPPER"
87: calt -26,-11lbl "AND LOWER AIRFOIL SURFACES"
88: ent "ANOTHER SET OF DATA?",A$;if cap(A$)="Y" goto "PLACE"
89: end
90: "XAX"11+p1210+p10+p13+p141.1p9+p151-.1p9+p11
91: p6-p7+p3+P(1)1p6+(p1-p3)p7+P(2)1jnp 3
92: "YAX"10+p11+p12+p1511+p131.1p9+p141-.1p9+p10
93: p6-p7+p4+P(3)1p6+(p2-p4)p7+P(4)
94: csiz 19/p2,1.5,p2/p11sc1 0,p1,0,p21calt p3-p10,p4-p11,1
95: str(p6+p16p7)+P$1len(P$)+p181max(p18,p19)+p1910+p171pen
96: if pos(P$, "0")#01"0"+P$(pos(P$, "0"),pos(P$, "0"))1if pos(P$, "0")#01 goto +0
97: calt p13(p9(p18/2+1)-p18/2)-p12(p18/2+.25),p12(.75p9-.25)-.3p131lbl P8
98: calt -p12(p18/2-.25)-p13(p18/2+p9(p18/2+1)),p12(.25-.75p9)+.3p13
99: p16+1+p161p17+1+p171if p16<=51calt p10,p11,21calt p12,p131calt p14,p15
100: goto +21if p16<=51goto +11goto +11if p17<=81goto -1
101: jnp -6
102: 1calt -.5p5p12,-.5p5p13,11len(L8)+p171calt p9p13(p19+2)+.5p13,0
103: csiz 23/p2,1.5,p2/p1,90p131calt -p12p17/2-p13p17/2,p12(1.75p9-.25)1lbl L8
104: if P(1)<P(2) and P(3)<P(4)1sc1 P(1),P(2),P(3),P(4)
105: ret
106: "symbol":
107: "0002445090901203006010144180720009030120540720006060120001202"+R8
108: val(R8(5p1-4,5p1-3))p41val(R8(5p1-2,5p1))p5
109: p4+p611calt .1p2cos(p6),.1p3sin(p6),1
110: p6+p5+p611calt .1p2(cos(p6)-cos(p6-p5)),.1p3(sin(p6)-sin(p6-p5)),2
111: if p6-360#p4 and p6-720#p4 goto -1
112: 1calt -.1p2cos(p6),-.1p3sin(p6),1ret
113: "STAR":
114: ent "ARE THERE ANY POINTS TO OMIT?",B$;if cap(B$)="Y"1calt 11 goto "OMIT"
115: "OK":
116: if M=11esb "DELTA"
117: if M=21esb "ALPHA"
118: ret
119:
120: "ALPHA":urt 705,"VS15"1for N=1 to 911-R1-20+X1B(1,N)+Y
121: 0+K(3)+K(4)+K(5)+K(6)+K(7)+K(8)1for M=1 to 9
122: if f1e21for S=1 to Z1if N=D(S) and M=E(S)1next M
123: if f1e21next S
124: (M-5)+K(1)1B(M,N)+K(2)1esb "LOOP"
125: next M1esb "KRUNCH"
126: for S=1 to 9 by .021(S-5)+D1A(1)D+A(2)+C
127: if S=int(S)+.51R+1+R1(R-5)+X1B(L,R,N)+Y
128: ((X-D)+2+25(Y-C)+2)+.5+Q
129: if Q<E1calt D,C,1
130: if Q>E1calt D,C,-2
131: next S1pen
132: next N
133: ret
134: "DELTA":
135: urt 705,"VS15"1for M=1 to 911+R1-8+X1B(M,1)+Y
136: 0+K(3)+K(4)+K(5)+K(6)+K(7)+K(8)
137: for N=1 to 9
138: if f1e21for S=1 to Z1if N=D(S) and M=E(S)1next N
139: if f1e21next S
140: (M-5)+K(1)1B(M,N)+K(2)1esb "LOOP"
141: next N1esb "KRUNCH"
142: for S=1 to 9 by .021(S-5)+A1A(1)A+A(2)+C
143: if S=int(S)+.51R+1+R1(R-5)+X1B(M,R,N)+Y
144: ((X-A)+2+25(Y-C)+2)+.5+Q
145: if Q<E1calt A,C,1
146: if Q>E1calt A,C,-2
147: next S1pen
148: next M
149: ret
150: "OMIT"1calt 2
151: Z+1+Z
152: ent "ENTER THE alpha COORDINATE",D(2)1D(2)/2+.5+D(2)
153: ent "ENTER THE delta(coord) COORDINATE",E(2)1E(2)/5+.5+E(2)
154: ent "MORE OMITIONS?",P$;if cap(P$)="N"1calt "OK"
155: goto "OMIT"
156: "LOOP":
157: K(3)+1+K(3)
158: K(1)+K(4)+K(4)+K(2)+K(5)+K(5)
159: K(1)K(2)+K(6)+K(6)
160: K(1)K(1)+K(7)+K(7)1K(2)K(2)+K(8)+K(8)

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161: ret
162: "KRUNCH":
163: K[4]K[5]/K[3]+K[9]K[4]K[4]/K[3]+K[10]
164: K[4]/K[3]+K[11]K[5]/K[3]+K[12]
165: K[5]K[5]/K[3]+K[13]
166: K[6]-K[9]+K[14]
167: K[7]-K[10]+K[15]K[8]-K[13]+K[16]
168: (K[6]-K[9])/K[15]-A[1]
169: K[12]-A[1]K[11]+A[2]
170: K[14]K[14]/K[15]K[16]-A[3]
171: ret
172: "aleph":csiz 1.3,1,1.43:clt -7.9,0
173: urt 705,"uc-99,4,5,99,-1,1,-1,-6,-1,0,-1,2,0,2,1,2,1,0,1,-6,1,1,-99"
174: ret
175: "deltaF":csiz .7,1,1.43:clt -13.5,0
176: urt 705,"uc-99,5,10,99,-2,4,-1,0,-1,-2,0,-2,1,-2,1,0,2,-2,0,-3,-2,-3"
177: clt -1,0
178: urt 705,"uc-99,3,0,99,-1,0,-2,3,0,3,2,2,-99"
179: clt .2,-.5:csiz .9,1,1,1.43:lbl "F"
180: ret
181: "DCSP":clt -18,0
182: csiz 1,1.5,1.47,90
183: urt 705,"uc99,2,8,2,-8,-4,0,-99"
184: lbl "C"
185: clt -.1,-.3
186: lbl "p"
187: ret
188: "AX":1-8+Q[9]12-Q[11]
189: "ANGLE OF ATTACK - (degrees)"*XS
190: ret
191: "DX":1-20+Q[9]15-Q[11]
192: "FLAP DEFLECTION ANGLE - (degrees)"*XS
193: ret
*30134

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10. NUMERICAL REGRESSION DATA

This chapter fits a line to the graphs of Chapters 8 and 9. This quantifies the slopes and intercepts, and the coefficient of determination gives an indication of linearity ($1.00 \rightarrow$ linear).

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CENTER FOR RESEARCH

DELTA P PROJECT
PHASE ONE

RESULTS OF LINEAR CURVE FITTING
FILE NUMBER 20 TAP NUMBER 1

DELTA (flap deflection angle) versus CHANGE IN
PRESSURE COEFFICIENT AT DIFFERENT ANGLES
ANGLES OF ATTACK (alpha)

```
*****
* alpha *      SLOPE * INTERCEPT * COEFFICIENT OF *
*          *          *          * DETERMINATION *
*          *          *          *
*****
* -8 *      0.030 * -1.049 *      0.99 *
* -6 *      0.028 * -0.746 *      0.99 *
* -4 *      0.025 * -0.451 *      0.98 *
* -2 *      0.024 * -0.165 *      0.99 *
*  0 *      0.025 *  0.153 *      1.00 *
*  2 *      0.025 *  0.508 *      1.00 *
*  4 *      0.021 *  0.809 *      0.86 *
*  6 *      0.027 *  1.116 *      0.99 *
*  8 *      0.031 *  1.425 *      0.99 *
*          *          *          *
*****
```

ALPHA (angle of attack) VERSES CHANGE IN
PRESSURE COEFFICIENT AT DIFFERENT FLAP DEFLECTION
ANGLES (delta)

```
*****
* delta *      SLOPE * INTERCEPT * COEFFICIENT OF *
*          *          *          * DETERMINATION *
*          *          *          *
*****
* -20 *      0.161 * -0.369 *      1.00 *
* -15 *      0.160 * -0.208 *      0.99 *
* -10 *      0.155 * -0.038 *      1.00 *
*  -5 *      0.153 *  0.062 *      1.00 *
*   0 *      0.150 *  0.197 *      1.00 *
*   5 *      0.154 *  0.324 *      1.00 *
*  10 *      0.152 *  0.435 *      0.98 *
*  15 *      0.158 *  0.574 *      1.00 *
*  20 *      0.157 *  0.679 *      1.00 *
*          *          *          *
*****
```

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DELTA P PROJECT
PHASE ONE

RESULTS OF LINEAR CURVE FITTING
FILE NUMBER 21 TAP NUMBER 2

DELTA (flap deflection angle) versus CHANGE IN
PRESSURE COEFFICIENT AT DIFFERENT ANGLES
ANGLES OF ATTACK (alpha)

```
*****
* alpha *      SLOPE *      INTERCEPT *      COEFFICIENT OF *
*      *      *      *      *      *      DETERMINATION *
*      *      *      *      *      *      *
*****
*      *      *      *      *      *      *
* -8 *      0.026 *    -0.583 *      0.99 *
* -6 *      0.024 *    -0.355 *      0.99 *
* -4 *      0.023 *    -0.125 *      0.99 *
* -2 *      0.021 *      0.044 *      0.99 *
*  0 *      0.019 *      0.108 *      1.00 *
*  2 *      0.019 *      0.307 *      0.97 *
*  4 *      0.022 *      0.517 *      1.00 *
*  6 *      0.024 *      0.732 *      1.00 *
*  8 *      0.024 *      0.942 *      0.99 *
*      *      *      *      *      *
*****
```

ALPHA (angle of attack) VERSES CHANGE IN
PRESSURE COEFFICIENT AT DIFFERENT FLAP DEFLECTION
ANGLES (delta)

```
*****
* delta *      SLOPE *      INTERCEPT *      COEFFICIENT OF *
*      *      *      *      *      *      DETERMINATION *
*      *      *      *      *      *      *
*****
*      *      *      *      *      *      *
* -20 *      0.094 *    -0.286 *      0.99 *
* -15 *      0.095 *    -0.153 *      0.99 *
* -10 *      0.091 *    -0.058 *      0.99 *
*  -5 *      0.090 *      0.058 *      0.99 *
*   0 *      0.087 *      0.186 *      0.99 *
*   5 *      0.089 *      0.303 *      0.98 *
*  10 *      0.091 *      0.427 *      0.98 *
*  15 *      0.091 *      0.511 *      0.98 *
*  20 *      0.091 *      0.600 *      0.98 *
*      *      *      *      *      *
*****
```


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DELTA P PROJECT
PHASE ONE

RESULTS OF LINEAR CURVE FITTING
FILE NUMBER 22 TAP NUMBER 3

DELTA (flap deflection angle) versus CHANGE IN
PRESSURE COEFFICIENT AT DIFFERENT ANGLES
- ANGLES OF ATTACK (alpha)

```
*****
*      *      *      *      *
* alpha *  SLOPE * INTERCEPT * COEFFICIENT OF *
*      *      *      *      * DETERMINATION *
*      *      *      *      *
*****
*      *      *      *      *
* -8 * 0.027 * -0.647 * 0.87 *
* -6 * 0.022 * -0.445 * 0.99 *
* -4 * 0.020 * -0.280 * 0.99 *
* -2 * 0.020 * -0.119 * 1.00 *
* 0 * 0.019 * 0.046 * 1.00 *
* 2 * 0.018 * 0.228 * 0.95 *
* 4 * 0.020 * 0.372 * 1.00 *
* 6 * 0.022 * 0.532 * 1.00 *
* 8 * 0.025 * 0.656 * 0.88 *
*      *      *      *      *
*****
```

ALPHA (angle of attack) VERSES CHANGE IN
PRESSURE COEFFICIENT AT DIFFERENT FLAP DEFLECTION
ANGLES (delta)

```
*****
*      *      *      *      *
* delta *  SLOPE * INTERCEPT * COEFFICIENT OF *
*      *      *      *      * DETERMINATION *
*      *      *      *      *
*****
*      *      *      *      *
* -20 * 0.083 * -0.376 * 1.00 *
* -15 * 0.099 * -0.307 * 0.93 *
* -10 * 0.069 * -0.215 * 0.92 *
* -5 * 0.079 * -0.059 * 1.00 *
* 0 * 0.077 * 0.056 * 1.00 *
* 5 * 0.080 * 0.164 * 1.00 *
* 10 * 0.083 * 0.278 * 1.00 *
* 15 * 0.083 * 0.362 * 1.00 *
* 20 * 0.083 * 0.440 * 1.00 *
*      *      *      *      *
*****
```

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DELTA P PROJECT
PHASE ONE

RESULTS OF LINEAR CURVE FITTING
FILE NUMBER 23 TAP NUMBER 4

DELTA (flap deflection angle) versus CHANGE IN
PRESSURE COEFFICIENT AT DIFFERENT ANGLES
ANGLES OF ATTACK (alpha)

```
*****
* alpha *      SLOPE * INTERCEPT * COEFFICIENT OF *
*      *      *      *      *      * DETERMINATION *
*      *      *      *      *      *
*****
*      *      *      *      *      *
* -8 *      0.025 * -0.561 *      0.94 *
* -6 *      0.021 * -0.409 *      1.00 *
* -4 *      0.020 * -0.279 *      0.99 *
* -2 *      0.019 * -0.154 *      1.00 *
*  0 *      0.019 * -0.027 *      1.00 *
*  2 *      0.020 *  0.101 *      1.00 *
*  4 *      0.020 *  0.230 *      1.00 *
*  6 *      0.021 *  0.367 *      0.99 *
*  8 *      0.022 *  0.507 *      0.99 *
*      *      *      *      *      *
*****
```

ALPHA (angle of attack) VERSES CHANGE IN
PRESSURE COEFFICIENT AT DIFFERENT FLAP DEFLECTION
ANGLES (delta)

```
*****
* delta *      SLOPE * INTERCEPT * COEFFICIENT OF *
*      *      *      *      *      * DETERMINATION *
*      *      *      *      *      *
*****
*      *      *      *      *      *
* -20 *      0.068 * -0.424 *      1.00 *
* -15 *      0.073 * -0.372 *      0.96 *
* -10 *      0.064 * -0.243 *      1.00 *
*  -5 *      0.062 * -0.128 *      1.00 *
*   0 *      0.061 * -0.012 *      1.00 *
*   5 *      0.064 *  0.093 *      1.00 *
*  10 *      0.066 *  0.205 *      0.99 *
*  15 *      0.066 *  0.288 *      1.00 *
*  20 *      0.066 *  0.367 *      1.00 *
*      *      *      *      *      *
*****
```

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DELTA P PROJECT
PHASE ONE

RESULTS OF LINEAR CURVE FITTING
FILE NUMBER 24 TAP NUMBER 5

DELTA (flap deflection angle) versus CHANGE IN
PRESSURE COEFFICIENT AT DIFFERENT ANGLES
ANGLES OF ATTACK (alpha)

```
*****
*      *      *      *      *
* alpha *  SLOPE * INTERCEPT * COEFFICIENT OF *
*      *      *      *      *
*      *      *      *      *
*****
*      *      *      *      *
*   -8 *  0.023 * -0.386 *      0.99 *
*   -6 *  0.022 * -0.283 *      0.99 *
*   -4 *  0.021 * -0.171 *      0.99 *
*   -2 *  0.021 * -0.063 *      0.99 *
*    0 *  0.020 *  0.039 *      1.00 *
*    2 *  0.020 *  0.144 *      1.00 *
*    4 *  0.021 *  0.252 *      1.00 *
*    6 *  0.022 *  0.364 *      0.99 *
*    8 *  0.022 *  0.477 *      0.99 *
*      *      *      *      *
*****
```

ALPHA (angle of attack) VERSES CHANGE IN
PRESSURE COEFFICIENT AT DIFFERENT FLAP DEFLECTION
ANGLES (delta)

```
*****
*      *      *      *      *
* delta *  SLOPE * INTERCEPT * COEFFICIENT OF *
*      *      *      *      *
*      *      *      *      *
*****
*      *      *      *      *
*  -20 *  0.058 * -0.368 *      1.00 *
*  -15 *  0.054 * -0.291 *      1.00 *
*  -10 *  0.053 * -0.193 *      1.00 *
*   -5 *  0.052 * -0.071 *      1.00 *
*    0 *  0.051 *  0.048 *      1.00 *
*    5 *  0.052 *  0.162 *      1.00 *
*   10 *  0.055 *  0.280 *      1.00 *
*   15 *  0.055 *  0.363 *      1.00 *
*   20 *  0.054 *  0.443 *      1.00 *
*      *      *      *      *
*****
```

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DELTA P PROJECT
PHASE ONE

RESULTS OF LINEAR CURVE FITTING
FILE NUMBER 25 TAP NUMBER 6

DELTA (flap deflection angle) versus CHANGE IN
PRESSURE COEFFICIENT AT DIFFERENT ANGLES
ANGLES OF ATTACK (alpha)

```
*****
* alpha *      SLOPE * INTERCEPT * COEFFICIENT OF *
*      *      *      * DETERMINATION *
*      *      *      *
*****
*      *      *      *
* -8 * 0.023 * -0.354 * 1.00 *
* -6 * 0.023 * -0.265 * 1.00 *
* -4 * 0.022 * -0.174 * 1.00 *
* -2 * 0.021 * -0.084 * 1.00 *
* 0 * 0.021 * 0.006 * 1.00 *
* 2 * 0.022 * 0.100 * 1.00 *
* 4 * 0.022 * 0.188 * 1.00 *
* 6 * 0.022 * 0.282 * 0.99 *
* 8 * 0.023 * 0.383 * 0.98 *
*      *      *      *
*****
```

ALPHA (angle of attack) VERSES CHANGE IN
PRESSURE COEFFICIENT AT DIFFERENT FLAP DEFLECTION
ANGLES (delta)

```
*****
* delta *      SLOPE * INTERCEPT * COEFFICIENT OF *
*      *      *      * DETERMINATION *
*      *      *      *
*****
*      *      *      *
* -20 * 0.050 * -0.414 * 1.00 *
* -15 * 0.045 * -0.335 * 1.00 *
* -10 * 0.045 * -0.237 * 1.00 *
* -5 * 0.044 * -0.111 * 1.00 *
* 0 * 0.043 * 0.012 * 1.00 *
* 5 * 0.046 * 0.135 * 1.00 *
* 10 * 0.047 * 0.254 * 1.00 *
* 15 * 0.046 * 0.349 * 1.00 *
* 20 * 0.046 * 0.430 * 1.00 *
*      *      *      *
*****
```

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DELTA P PROJECT
PHASE ONE

RESULTS OF LINEAR CURVE FITTING
FILE NUMBER 26 TAP NUMBER 7

DELTA (flap deflection angle) versus CHANGE IN
PRESSURE COEFFICIENT AT DIFFERENT ANGLES
ANGLES OF ATTACK (alpha)

```
*****
*      *      *      *      *
* alpha *      *      *      *
*      *      *      *      *
*      *      *      *      *
*****
*      *      *      *      *
* -8   *      *      *      *
* -6   *      *      *      *
* -4   *      *      *      *
* -2   *      *      *      *
* 0    *      *      *      *
* 2    *      *      *      *
* 4    *      *      *      *
* 6    *      *      *      *
* 8    *      *      *      *
*      *      *      *      *
*****
```

alpha	SLOPE	INTERCEPT	COEFFICIENT OF DETERMINATION
-8	0.025	-0.291	1.00
-6	0.025	-0.220	1.00
-4	0.024	-0.138	1.00
-2	0.024	-0.063	1.00
0	0.023	0.014	1.00
2	0.025	0.079	1.00
4	0.024	0.164	1.00
6	0.025	0.241	0.99
8	0.024	0.327	0.98

ALPHA (angle of attack) VERSES CHANGE IN
PRESSURE COEFFICIENT AT DIFFERENT FLAP DEFLECTION
ANGLES (delta)

```
*****
*      *      *      *      *
* delta *      *      *      *
*      *      *      *      *
*      *      *      *      *
*****
*      *      *      *      *
* -20  *      *      *      *
* -15  *      *      *      *
* -10  *      *      *      *
* -5   *      *      *      *
* 0    *      *      *      *
* 5    *      *      *      *
* 10   *      *      *      *
* 15   *      *      *      *
* 20   *      *      *      *
*      *      *      *      *
*****
```

delta	SLOPE	INTERCEPT	COEFFICIENT OF DETERMINATION
-20	0.042	-0.450	0.99
-15	0.038	-0.367	0.99
-10	0.038	-0.257	1.00
-5	0.037	-0.112	1.00
0	0.036	0.017	1.00
5	0.038	0.143	1.00
10	0.039	0.281	1.00
15	0.039	0.385	1.00
20	0.039	0.474	1.00

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RESULTS OF LINEAR CURVE FITTING
FILE NUMBER 27 TAP NUMBER 8

DELTA (flap deflection angle) versus CHANGE IN
PRESSURE COEFFICIENT AT DIFFERENT ANGLES
- ANGLES OF ATTACK (alpha)

```
*****
*      *      *      *      *
* alpha *      *      *      *
*      *      *      *      *
*      *      *      *      *
*****
*      *      *      *      *
*      *      *      *      *
*      *      *      *      *
*      *      *      *      *
*      *      *      *      *
*      *      *      *      *
*      *      *      *      *
*      *      *      *      *
*      *      *      *      *
*      *      *      *      *
*      *      *      *      *
*      *      *      *      *
*      *      *      *      *
*      *      *      *      *
*      *      *      *      *
*****
```

alpha	SLOPE	INTERCEPT	COEFFICIENT OF DETERMINATION
-8	0.028	-0.277	1.00
-6	0.027	-0.215	1.00
-4	0.027	-0.144	1.00
-2	0.026	-0.078	1.00
0	0.026	-0.012	1.00
2	0.026	0.051	1.00
4	0.026	0.118	0.99
6	0.027	0.185	0.99
8	0.027	0.261	0.98

ALPHA (angle of attack) VERSES CHANGE IN
PRESSURE COEFFICIENT AT DIFFERENT FLAP DEFLECTION
ANGLES (delta)

```
*****
*      *      *      *      *
* delta *      *      *      *
*      *      *      *      *
*      *      *      *      *
*****
*      *      *      *      *
*      *      *      *      *
*      *      *      *      *
*      *      *      *      *
*      *      *      *      *
*      *      *      *      *
*      *      *      *      *
*      *      *      *      *
*      *      *      *      *
*      *      *      *      *
*      *      *      *      *
*      *      *      *      *
*      *      *      *      *
*      *      *      *      *
*****
```

delta	SLOPE	INTERCEPT	COEFFICIENT OF DETERMINATION
-20	0.038	-0.507	0.99
-15	0.033	-0.428	0.99
-10	0.033	-0.310	0.99
-5	0.032	-0.162	1.00
0	0.031	-0.013	1.00
5	0.033	0.132	1.00
10	0.034	0.283	1.00
15	0.033	0.399	1.00
20	0.033	0.495	1.00

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PHASE ONE

RESULTS OF LINEAR CURVE FITTING
FILE NUMBER 28 TAP NUMBER 9

DELTA (flap deflection angle) versus CHANGE IN
PRESSURE COEFFICIENT AT DIFFERENT ANGLES
ANGLES OF ATTACK (alpha)

```
*****
* alpha *      SLOPE * INTERCEPT * COEFFICIENT OF *
*      *      *      *      *      * DETERMINATION *
*      *      *      *      *      *
*****
*      *      *      *      *      *
* -8 *      0.030 * -0.238 *      1.00 *
* -6 *      0.030 * -0.185 *      1.00 *
* -4 *      0.030 * -0.135 *      1.00 *
* -2 *      0.029 * -0.068 *      1.00 *
*  0 *      0.029 * -0.013 *      1.00 *
*  2 *      0.029 *  0.039 *      1.00 *
*  4 *      0.029 *  0.095 *      0.99 *
*  6 *      0.030 *  0.152 *      0.99 *
*  8 *      0.029 *  0.220 *      0.98 *
*      *      *      *      *      *
*****
```

ALPHA (angle of attack) VERSES CHANGE IN
PRESSURE COEFFICIENT AT DIFFERENT FLAP DEFLECTION
ANGLES (delta)

ORIGINAL PAGE IS
OF POOR QUALITY

```
*****
* delta *      SLOPE * INTERCEPT * COEFFICIENT OF *
*      *      *      *      *      * DETERMINATION *
*      *      *      *      *      *
*****
*      *      *      *      *      *
* -20 *      0.034 * -0.559 *      0.98 *
* -15 *      0.027 * -0.475 *      0.99 *
* -10 *      0.027 * -0.346 *      0.99 *
*  -5 *      0.027 * -0.187 *      1.00 *
*   0 *      0.026 * -0.019 *      1.00 *
*   5 *      0.028 *  0.148 *      0.99 *
*  10 *      0.029 *  0.317 *      1.00 *
*  15 *      0.028 *  0.447 *      1.00 *
*  20 *      0.028 *  0.552 *      1.00 *
*      *      *      *      *      *
*****
```

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PHASE ONE

RESULTS OF LINEAR CURVE FITTING
FILE NUMBER 29 TAP NUMBER 10

DELTA (flap deflection angle) versus CHANGE IN
PRESSURE COEFFICIENT AT DIFFERENT ANGLES
ANGLES OF ATTACK (alpha)

```
*****
* alpha * SLOPE * INTERCEPT * COEFFICIENT OF *
* * * * * DETERMINATION *
* * * * *
* * * * *
* -8 * 0.034 * -0.214 * 0.99 *
* -6 * 0.034 * -0.148 * 0.99 *
* -4 * 0.033 * -0.118 * 1.00 *
* -2 * 0.033 * -0.071 * 1.00 *
* 0 * 0.033 * -0.024 * 1.00 *
* 2 * 0.033 * 0.019 * 1.00 *
* 4 * 0.033 * 0.065 * 0.99 *
* 6 * 0.033 * 0.111 * 0.99 *
* 8 * 0.032 * 0.168 * 0.97 *
* * * * *
*****
```

ALPHA (angle of attack) VERSES CHANGE IN
PRESSURE COEFFICIENT AT DIFFERENT FLAP DEFLECTION
ANGLES (delta)

```
*****
* delta * SLOPE * INTERCEPT * COEFFICIENT OF *
* * * * * DETERMINATION *
* * * * *
* * * * *
* -20 * 0.029 * -0.630 * 0.97 *
* -15 * 0.022 * -0.541 * 0.99 *
* -10 * 0.023 * -0.400 * 0.99 *
* -5 * 0.023 * -0.226 * 0.99 *
* 0 * 0.017 * -0.011 * 0.74 *
* 5 * 0.023 * 0.153 * 0.99 *
* 10 * 0.025 * 0.347 * 0.99 *
* 15 * 0.023 * 0.494 * 1.00 *
* 20 * 0.021 * 0.603 * 0.99 *
* * * * *
*****
```


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DELTA P PROJECT
PHASE ONE

RESULTS OF LINEAR CURVE FITTING
FILE NUMBER 30 TAP NUMBER 11

DELTA (flap deflection angle) versus CHANGE IN
PRESSURE COEFFICIENT AT DIFFERENT ANGLES
ANGLES OF ATTACK (α)

```
*****
* alpha *      SLOPE * INTERCEPT * COEFFICIENT OF *
*      *      *      * DETERMINATION *
*      *      *      *
*****
*      *      *      *
* -8 * 0.048 * -0.099 * 0.99 *
* -6 * 0.049 * -0.065 * 0.99 *
* -4 * 0.049 * -0.030 * 0.99 *
* -2 * 0.049 * 0.003 * 0.99 *
* 0 * 0.048 * 0.034 * 0.99 *
* 2 * 0.049 * 0.064 * 0.99 *
* 4 * 0.041 * 0.173 * 0.87 *
* 6 * 0.048 * 0.126 * 0.98 *
* 8 * 0.046 * 0.179 * 0.96 *
*      *      *      *
*****
```

ALPHA (angle of attack) VERSES CHANGE IN
PRESSURE COEFFICIENT AT DIFFERENT FLAP DEFLECTION
ANGLES (δ)

```
*****
* delta *      SLOPE * INTERCEPT * COEFFICIENT OF *
*      *      *      * DETERMINATION *
*      *      *      *
*****
*      *      *      *
* -20 * 0.024 * -0.806 * 0.91 *
* -15 * 0.026 * -0.634 * 0.28 *
* -10 * 0.014 * -0.544 * 0.99 *
* -5 * 0.016 * -0.308 * 0.99 *
* 0 * 0.017 * -0.001 * 0.99 *
* 5 * 0.017 * 0.313 * 0.99 *
* 10 * 0.018 * 0.615 * 1.00 *
* 15 * 0.014 * 0.817 * 1.00 *
* 20 * 0.016 * 0.932 * 0.93 *
*      *      *      *
*****
```

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DELTA P PROJECT
PHASE ONE

RESULTS OF LINEAR CURVE FITTING
FILE NUMBER 31 TAP NUMBER 12

DELTA (flap deflection angle) versus CHANGE IN
PRESSURE COEFFICIENT AT DIFFERENT ANGLES
ANGLES OF ATTACK (alpha)

```
*****
* alpha * SLOPE * INTERCEPT * COEFFICIENT OF *
* * * * DETERMINATION *
* * * *
* * * *
* -8 * 0.060 * -0.016 * 0.98 *
* -6 * 0.061 * 0.015 * 0.98 *
* -4 * 0.061 * 0.045 * 0.98 *
* -2 * 0.061 * 0.073 * 0.98 *
* 0 * 0.060 * 0.095 * 0.98 *
* 2 * 0.060 * 0.118 * 0.98 *
* 4 * 0.060 * 0.143 * 0.98 *
* 6 * 0.059 * 0.165 * 0.98 *
* 8 * 0.057 * 0.212 * 0.96 *
* * * *
*****
```

ALPHA (angle of attack) VERSES CHANGE IN
PRESSURE COEFFICIENT AT DIFFERENT FLAP DEFLECTION
ANGLES (delta)

```
*****
* delta * SLOPE * INTERCEPT * COEFFICIENT OF *
* * * * DETERMINATION *
* * * *
* * * *
* -20 * 0.020 * -0.921 * 0.86 *
* -15 * 0.010 * -0.826 * 0.99 *
* -10 * 0.010 * -0.638 * 0.99 *
* -5 * 0.015 * -0.371 * 0.99 *
* 0 * 0.019 * 0.029 * 0.99 *
* 5 * 0.016 * 0.476 * 1.00 *
* 10 * 0.013 * 0.832 * 0.98 *
* 15 * 0.009 * 1.063 * 0.97 *
* 20 * 0.009 * 1.207 * 0.89 *
* * * *
*****
```

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DELTA P PROJECT
PHASE ONE

RESULTS OF LINEAR CURVE FITTING
FILE NUMBER 32 TAP NUMBER 13

DELTA (flap deflection angle) versus CHANGE IN
PRESSURE COEFFICIENT AT DIFFERENT ANGLES
ANGLES OF ATTACK (alpha)

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*****
* alpha * SLOPE * INTERCEPT * COEFFICIENT OF *
* * * * * DETERMINATION *
* * * * *
* -8 * 0.046 * -0.038 * 0.99 *
* -6 * 0.047 * -0.012 * 1.00 *
* -4 * 0.046 * 0.014 * 1.00 *
* -2 * 0.047 * 0.034 * 0.99 *
* 0 * 0.047 * 0.054 * 1.00 *
* 2 * 0.047 * 0.075 * 1.00 *
* 4 * 0.047 * 0.108 * 0.99 *
* 6 * 0.047 * 0.127 * 1.00 *
* 8 * 0.045 * 0.166 * 0.99 *
* * * * *
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ALPHA (angle of attack) VERSES CHANGE IN
PRESSURE COEFFICIENT AT DIFFERENT FLAP DEFLECTION
ANGLES (delta)

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*****
* delta * SLOPE * INTERCEPT * COEFFICIENT OF *
* * * * * DETERMINATION *
* * * * *
* -20 * 0.013 * -0.795 * 0.96 *
* -15 * 0.008 * -0.676 * 0.99 *
* -10 * 0.012 * -0.441 * 0.98 *
* -5 * 0.014 * -0.226 * 1.00 *
* 0 * 0.016 * 0.042 * 0.99 *
* 5 * 0.014 * 0.322 * 1.00 *
* 10 * 0.013 * 0.568 * 0.97 *
* 15 * 0.010 * 0.760 * 1.00 *
* 20 * 0.010 * 0.973 * 0.98 *
* * * * *
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01: urt 6.7,A!urt 6!urt 6.2,A[1],A[2]!urt 6!urt 6.8,A[3]!urt 6!urt 6
02: urt 6.S$,E$!urt 6.B$!urt 6.D$!urt 6.B$!urt 6.S$,E$!urt 6.F$!urt 6.C$
03: urt 6.F$!urt 6.S$,E$!urt 6.B$
04: for M=1 to 9!(M-5)5+D
05: A[1]D+A[2]*C
06: if fl$2!sf$ 4!for S=1 to 2!if M=M[S] and N=N[S]!urt 6.5,D,B[M,N],C!sf$ 3
07: if fl$2!if fl$3!cf$ 3!cf$ 4!urt 6.B$!next M
08: if fl$4!next 8!cf$ 4
09: B[M,N]-C+V!100V/B[M,N]*W
10: urt 6.9,D,B[M,N],C,V,W!urt 6.B$
11: next M!urt 6.S$,E$!for S=1 to 10!urt 6!next S
12: ret
13: "DOUT":
14: urt 6.3,P,F!urt 6!urt 6.4,X!urt 6
15: urt 6.6,D!urt 6!urt 6.1,A[1],A[2]!urt 6!urt 6.8,A[3]!urt 6!urt 6
16: urt 6.S$,E$!urt 6.B$!urt 6.A$!urt 6.B$!urt 6.S$,E$!urt 6.F$!urt 6.C$
17: urt 6.F$!urt 6.S$,E$!urt 6.B$
18: for N=1 to 9!(N-5)2+A
19: A[1]A+A[2]*C
100: if fl$2!sf$ 4!for S=1 to 2!if M=M[S] and N=N[S]!urt 6.5,A,B[M,N],C!sf$ 3
101: if fl$2!if fl$3!cf$ 3!cf$ 4!urt 6.B$!next N
102: if fl$4!next 8!cf$ 4
103: B[M,N]-C+V!100V/B[M,N]*W
104: urt 6.9,A,B[M,N],C,V,W!urt 6.B$
105: next N!urt 6.S$,E$!for S=1 to 10!urt 6!next S
106: ret
*17879

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OF POOR QUALITY